PRICES SUBJECT TO MARKET CHANGES WITHOUT NOTICE.

Mustrated Price-Lisz

OF

W. C. DUYCKINCK,

IMPORTER, MANUFACTURER, AND DEALER IN ALL VARIETIES OF

SUPPLIES

FOR

Railroads, Steamships, Machinists, Mills, and Miners,

50 and 52 John Street,

P. O. BOX 4101,

NEW-YORK.

NEW-YORK:

S. W. Green, Printer and Electrotyper, Nos. 16 and 18 Jacob Street.

1877.

TRANSPORTATION LIBRARY

Digitized by Google

This is a reproduction of a library book that was digitized by Google as part of an ongoing effort to preserve the information in books and make it universally accessible.

Googlebooks

https://books.google.com



PRICES SUBJECT TO MARKET CHANGES WITHOUT NOTICE.

Mustrated Price-Lisz

OF

W. C. DUYCKINCK,

IMPORTER, MANUFACTURER, AND DEALER IN ALL VARIETIES OF

SUPPLIES

FOR

Railroads, Steamships, Machinists, Mills, and Miners,

50 and 52 John Street,

P. O. BOX 4101,

NEW-YORK.

NEW-YORK:

S. W. Green, Printer and Electrotyper, Nos. 16 and 18 Jacob Street.

1877.

TRANSPORTATION LIBRARY

Digitized by Google

9-27-40

WE have compiled this Catalogue for the convenience of the public, thereby enabling all requiring Supplies to select at once those articles best suited to their wants.

Carrying the largest stock of general supplies in this city, we can always deliver promptly, and at lowest market prices, all regular goods. Articles irregular, or not standard, furnished with as little delay as possible.

Anticipating a share of your patronage, and calling your attention to the various agencies we represent in New-York,

We are, yours,

New-York, February 22, 1877.

W. C. D.

ALL GOODS WARRANTED AS REPRESENTED.

AGENCIES.

Reading Bolt and Nut Works.

Rochester Machine Screw Co.

H. Prentice & Co., Taps and Dies.

J. M. King & Co., Taps and Dies.

Billings & Spencer Drop Forgings.

Ashcroft Steam Gauges.

American Steam Gauges.

Judson Governors.

Pickering Governors.

Waters Governors.

Stanwood Pipe Cutters.

Jackson Steel Frog and

Crossing.



Empire Forges.

LeCount's Goods.

Nathan & Dreyfus Lubricators.

Star Lubricators.

Keys and Cotters, etc., etc.

Spencer Flue Brushes.

Eddy Valves.
Chapman Valves.
Star Valves.
Sturtevant Blowers.
Stillson Pipe Wrenches.
Seamless Steel Wheelbarrows and Coal Tubs.



INDICATORS AND REGULATORS.

PUMPS AND FIRE DEPARTMENT GOODS.

STEAM, GAS, AND WATER PIPE AND FITTINGS.

LAMPS AND LANTERNS.

PIPE TOOLS.

PLUMBERS' TOOLS.

MACHINE SHOP TOOLS.

BLACKSMITHS' TOOLS.

MOLDERS' TOOLS.

BOILER MAKERS' TOOLS.

RAILROAD CONTRACTORS' TOOLS.

BELTING AND TOOLS.

MACHINISTS' FINE TOOLS.

BOLTS, NUTS, ETC.

CAR TRIMMINGS.

SUNDRIES.

	PAGE	Page		PAGE
Adzes	146	Blocks, Wood	Chain	
Axes	146	Blocks, Wrought Iron 151	Chain Links	
Angle Valves	43	Bolt Cutter, Grant's	Calipers 164,	
Ayres Valves	46	Bolt Cutter, Hand	Caliper Rule	
Anvils	120	Bolt Cutter, Schlenker's 110, 111	Caliper Square	
Air Cocks	47	Bolt Cutter, Lightning 112	Calipers, Vernier	
Air Gauges	5	Bibbs, Water 39	Champion Ratchet Drill	
Air Valves	41	Bibbs, Steam 39	Check Valves	
Arbor for Chucks	104	Bits 100	Centring Attachment	
Auxiliary Jaw	83	Bit Stocks	Centring Machine	
Augers	100	Bit Stock Drills 101	Chimes, Whistle	
Augers, Gas Fitters'	86	Brine Pots 10	Chisels, Pipe	
Augers, Sand and Clay	29	Bridge Builders' Wrench 94	Coal Cars	
Angular Bit Stock	96	Buckets 35	Coal and Water Boxes	
Angular Ratchet Drill	95	Butterfly Valve 41	Crowbars	
·Adjustable Ratchet Drill	95	Buttress 120	Cordage	
		Brushes 130	Compass Dividers 164,	
Baggage Trucks	150	Baggage Checks 187	Core Box	
Balances, Spring	12	Blast Gates	Crow, Drilling	
Balance Valve	41	Basket Racks 185	Compounds	
Braces, Bit	96	Belts, Polishing 177	Copper Bolt Hatchet	
Baskets, Suction	40	Bell Cord Fittings 185	Coe Drill	
Back Pressure Valve	41	Bits, Patent Machine 192	Coe Wrench	
Baxter Wrenches	94	Blowers, Sturtevant 189	Coil Heater	-
Breast Drills	96	Bolts, Carriage	Coil Stands	-
Bells	32	Bolts, Elevator 180	Collins Wrench	, ,
Bell Cranks	33	Bolts, Ends	Couplings, Plain	
Bell Pulls	33	Bolts, Hanger 180	Couplings, Hose	
Bevels	169	Bolts, Machine 180	Cross Valve	43
Bench Screws	93	Bolts, Plow	Combination Columns	8
Bending Cones	119	Bolts, Skein 182	Clocks, Marine	7
Belting	158	Bolts, Sink 181	Cocks, Air	
Belt Coupling	160	Bolts, Stove 181	Cocks, Cylinder	
Belt Hooks	160	Bolts, Track 180	Cocks, Gas	-
Belt Punches	160	Bolts, Tire 181	Cocks, Gauge, Ball Lever	
Belt Rivets	160	Burners, Donohue's Patent 192	Cocks, Gauge, Cook's	
Belt Studs	160		Cocks, Gauge, Hard Rubber	
Belt Tighteners	160	Clamps 108, 109	Cocks, Gauge, Improved Mississippi	
Bellows, Blacksmiths'		Cam Valve 42	Cocks, Gauge, Jenkins'	
Bellows, Hurricane	127	Chapman Valve 45	Cocks, Gauge, Mississippi	_
Bellows, Molders	129	Claw Jacks 145	Cocks, Gauge, Register	
Borax	174	Cab Lamps 74	Cocks, Gauge, Ross'	
Blowers, Clark	128	Cars, Coal 150	Cocks, Gauge, Self-Cleaning	
Blowers, Eclipse		Cars, Hand 149	Cocks, Gauge, Steam Metal	
Blowers, Keystone	126	Car Washers 132	Cocks, Gauge; Smith's	
Blowers, MacKenzie		Carts 148	Cocks, Gauge, Schofield's	
Blowers, Root	126	Caps, Iron Driving	Cocks, Gauge, Stuffing Box	
Blowers, Sturtevant	189	Chandelier Hooks 54	Cocks, Gauge, Wooden Handle	
Boxes, Coal and Wood		Chasers, Pipe 85	Cocks for Steam Gauges	
Blow Pipe		Chasers, Screw	Cocks, Steam	
Boring Machines 99		Cans, Oil 70	Cock Wrenches	54
Brooms		Cans, Locomotive Oil 70	Cocks, Iron	48
Blocks, Pickering's		Cans, Tallow 70	Cutter, Iron	
Blocks, Self-Sustaining	153	Cast Iron Fittings 57	Cushman Chucks	107

PAGE	PAGE	1	
Cups, Compound	Forge, Empire		Pagi
		Hammers, Farriers'	
Chucks, Drill 10.f	Forge, Keystone 125	Hammers, Machinists'	16:
Chucks, Lathe 105-107	Forge, Patterson's 123	Hammers, Nail	16:
Crucibles 129	Forge, Root's 124	Hammers, Napping	
Cutting Pliers 163	Forge, Queen's 125	Hammers, Paving	
Cutting Pliers, Plumbers' 86	Forged Wrenches94	Hammers, Planishing	
Cups, Oil, Plain	Furnaces 56		
Cylinder Cocks	Furnace, Brass Founders'	Hammers, Riveting	
	Flue Brushes	`Hammers, Striking	
		Hammers, Stone	
Car Fittings 185, 186	Fly Presses	Hammers, Turning	120
Crank Pin Machine 189	Fire Extinguisher	Handles	170
Copper 190	Foot Valves 40	Hand Drill	9.
	·	Head Lights	
Damper Regulator	Gas Heater 170	Heater Coils	-
Detectors, Low Water 11	Gauge Glasses 1	Heaters, Feed Water	
Detectors, Watchmen	Gauges, Air 5	•	
l l	Gauges, Centre	Hose	_
Diamond Tool 175, 192	Gauges, Gas House 5	Hose Bands	_
Dies, Blacksmith	•	Hose Caps	
Die Dog 108	Gauges, Gas Fitters' 5	Hose Cart	35
Die Holder 85	Gauges, Hydraulic4	Hose Cocks	3
Drills, Blasting	Gauges, Drill	Hose Couplings	
Differential Pulley Blocks 153	Gauges, Marking 167	Hose Dressing	
Drill Chucks	Gauges, Steam, American 3	Hose Nipple	
Drill, Hand	Gauges, Steam, Ashcroft 2	Hose Nozzles	
Drii, Hand	Gauges, Steam, Buffalo 3		
Drill, Twist	Gauges, Steam, Bourdon	Hose Pipe	
Drill Cutter 133		Hose Spanner	
Drill Stock 87	• •	Hose Valve	37
Drill, Pipe 85	Gauges, Steam, Lane's Improved 3	Hooks, Chandelier	54
Drill, Track Ratchet 142	Gauges, Steam, Mercurial Syphon 5	Hooks, Pipe	54
Dividers 164	Gauges, Steam, Recording 2	Hook Plates	58
Dogs 108, 109, 192	Gauges, Steam, Schaeffer & Budenberg 4	Horizontal Drill	
Drop Press	Gauges, Steam, Self-testing 2	Horton Chuck	
Diop riess	Gauges, Steam, Test		
Dynamometer 9	Gauges, Steam, Utica	Hoisting Machine	
	Gauges, Steam, Cocks for 4	Hydraulic Gauges	
Expansion Bits 100		Hydraulic Jacks	143
Expansion Joints 54	Gauge Screw Plate	Hydraulic Ram	30
Expansion Mandrels	Gauge, Steel 167	Hydrant	54
Expansion Plates 58	Gauge, Wire 167	Hoppers and Urinals	
	Gauge Cocks, see Cocks.		•
Expansion Reamers	Gas Cocks 48	Injectors, Eclipse	21
Expander, Tube 133	Gauge, Track 149	Injectors, Friedmann	
Emery174	Gauge, Water 1		
Emery Cloth	Gauge, Syphon 4	Injectors, Giffard	
Emery Paper 174	Gallagher's Ratchet Drill 95	Injectors, Mack	19
Emery Wheels 175		Injectors, Rue	20
Emery Wheel Dresser	Garside's Ratchet Drill 95	Indicator, Hydraulic	4
Extension Braces	Grindstones 174	Indicator, Revolution	7
Engine Register 7	Gongs 33	Indicator, Richards	q
	Gongs, Steam	Indicator, Speed	
Empire Forge	Gong Springs 33	Ingersoll Ratchet Drill	
Extinguisher, Fire	Globes, Lantern 74	Instruments	
Eddy Valve 44	Globe Valves 43	Iron	100
Emery Grinders 176, 177	Governors, Huntoon	1ron	190
	Governors, Judson 15, 192	•	_
Flanges 53	Governors, Shive 16	Jack Screws	
		Jack, Ratchet	
Flange Unions53	Governors, Pickering	Jack, Ball's	144
Farriers' Tools 120	Governors, Waters 16	Jack, Leffel's	144
Flasks 127	Governor Valves 41	Jack, Hydraulic	143
Feather Dusters 132	Ground Glass 174	Jenkins' Valve	
Felt, Hair 159	Gutta Percha 35	Judson's Chuck	
Ferrules, Wrought Iron 54	Gum Shellac174	Judson Governors 15,	102
Files 173	Grindstone Frames 178	Judson Governois	707
Files, Recutting	Governors, Pickering192	Johnson's Chuck	10/
Files, Stubs'			
File Cards	Hand Cars 149	Key Wrench	94
File Calus	Hack Saws163	Keys and Cotters	161
Flint Paper	Hatchets146	Knives, Machine	171
Fittings, Brass Pipe 54		Knives, Chipping	86
Fittings, Cast Iron 57	Hammers, Babbitt		
Fittings, Malleable Iron 55	Hammers, Blacksmiths' 120	T C.	
Fittings, Wrought Iron 52	Hammers, Copper 162	Lamps, Car 73.	11
Fog Signals 149	Hammers, Drilling 148	Lamps, Gas Fitters'	50
Forge, Blast	Hammers, Engineers' 162	Lamps, Hand	72
5 ·			

	Page	PAGE		PAGE
Lamps, Miners'	. 72	Press, Hydraulic	Ratchet Brace	- 06
Lanterns	. 73	Press, Power	Register, Engine	
Ladles	86	Press, Screw	Register Valve	/
Lacing, Belt				
Lord Day Ded	. 150	Pressure Regulators 14	Riddles, Molders'	
Lead, Dry Red	. 174	Pipe 51	Ring Plates	
Levels		Pipe Bushings 85	Rough Stops	37
Letters, Pattern	. 129	Pipe Clamps 88	Rottenstone	
Letters, Steel		Pipe Cutters 81	Rubber Valves	
LeCount's Goods		D. G		
Lindsay Wrench			Rule, Flexible	
		Pipe Fittings, Brass 54	Rammers	
Lime Extractor		Pipe Fittings, Iron 52	Ram, Hydraulic	30
Lock Safety Valves	. 42	Pipe Hooks 54	Ratchet Drills	
Lowell Ratchet Drill	. 95	Pipe Leak Stopper 54	Ratchet Jacks	744
Lubricators, Broughton		D: 0	Databat Weensh	144
Lubricators, Common			Ratchet Wrench	
		Pipe Stands	Rail Tongs	
Lubricators, Excelsior		Pipe Stocks and Dies 84	Reamers 102,	, 133
Lubricators, Gee's	. 66	Pipe Taps 85	Reamers, Expanding	103
Lubricators, Locomotive	65	Pipe Tongs	Reamers, Goddard's Patent	
Lubricators, N. & D		Pipe Vises 88	Reamers, Pipe	192
Lubricators, Open Top		Pipe Wrenches 82	Realiters, Tipe	05
· • •	- 1		Revolving Rule	7
Lubricators, Star		Picks146	Revolution Indicator	
Lubricators, Siebert's		Phers 163	Regulators, Damper	13
Lubricators, Storer's	. 66	Pincers, Blacksmiths'	Regulators, Pressure	14
Ludlow Valve	. 45	Pickering's Blocks	Reels, Wire	
Lag Screws		Point, Iron Filter		
			Rivets	
M*111: 31711 -		Portable Drilling Machine 99	Rivet Sets 133,	, 16 2
Milling Wheels	. 170	Puddling Bar 148	Richards Indicator	9
Machinists' Fine Tools 163	3-172	Punch, Duplex 135	Rolls, Boiler	124
		Punch, Hydraulic 133	Rules, Steel.	*34 *66
Nail Sets.	. 162	Punch, Hydraulic Track 142	Rubber Cement	100
Nippers 163		Punch, Double Lever	Rubber Cement	35
			Russell's Patent Valves	43
Nipple, Hose		Punch, Power141		
Nipples, Soldering		Punch, Screw 133		
Nut Taps	116	Plumbers' Tools	Star Paper	174
Nuts	184	Plumbago 174	Shackles, Patent	154
Nuts, Malleable		Plumb Bobs	Safety Valve 41,	12
,	. 203	•	Salter's Balances	7-
	l	Pulleys, Governor 15		
Oilers, Broughton's		Punch and Shears, Taft's 140	Swage Block	119
Oilers, Bonnell's	. 71	Pumps, Air 30	Scrapers, Flue	131
Oilers, Common		Pumps, Boiler Feed	Scrapers, Road:	148
Oilers, Holland's		Pumps, Centrifugal	Salinometers	10
	- 1		Straightener, Rail	745
Oilers, Hodge's	• 1	• / •	Strainers, Pump	145
Oilers, Malleable		Pumps, Cistern	Strainers, Fump	40
Oilers, Machine 70		Pumps, Lift and Force 28	Straps, Pipe	54
Oilers, Prior's	. 71	Pumps, Plumbers' Force 30	Scaling Picks	171
Oilers, Scripture's		Pumps, Pendulum Force	Spark Cloth	156
Oil Cans, Tin		Pumps, Double Acting Force 28	Steam Traps	60
•	- 1		Steam Gauges	•••
Oil Cans, Thompson		Pumps, Rotary Force	Steam Gauges	4
Oil Cabinets	. 69	Pumps, Proving 30	Steam Cocks	39
Oil Tanks	. 69	Pumps, Syphon 25	Steam Stops	39
Oil Cups	. 61	Pumps, Windmill Force 28	Steam Pumps, see Pumps.	
Oil Cups, Broughton's 67	1	Pumps, Pressure Test	Shears, Hand	162
		Pumps, Steam Gauge Test 6	Shears and Punches	105
Oil Cups, Eagle.		-	Screens Sand and Coal	-37
Oil Cups, Gee's		Pumps, Blake's Steam	Screens, Sand and Coal	
Oil Cups, Star	68	Pumps, Bucket Plunger Steam 27	Speed Indicators	
Oil Feeders	. 70	Pumps, Cameron's Steam	Spencer Brushes	132
Oil Font	. 72	Pumps, Guild & Garrison's Steam 24	Screw Drivers	171
Oil Testing Machine		Pumps, Knowles' Steam 22	Steel Rules	166
Oil Stones			Street Lamps	
		• • •	Slades Coal	
Oil Pumps	. 69	Pumps, Niagara Steam 24	Sledge, Coal	
`	İ	Pumps, Pneumatic Test 30	Sledge, Smiths'	
Packing	. 159	Pumps, Hydraulic	Switch Stands	149
Packing Hooks		Pump Valves 40	Switch, Portable	140
Packer's Ratchet Drills		Pyrometer 10	Snips	760
		•		
Plates, Ring	- 1	Padlocks	Swing Joints	
Plates, Hook		Pipe, Spiral, Locked, and Riveted 192	Spring Keys	161
Plates, Expansion	. 58	Pumps, Blake's Steam	Sprinklers	37
Pails		Pumps, Knowles' Steam 192	Springs, Gong	
Peet Valve	٠- ١	Plugs, Patent Basin	Shovels, Molders'	
Press, Drop		Plugs, Fusible	Shovels	
•	- 1	-		
Press, Fly	. 130	Punches, Conductors' 187	Scoops	147

_		
PAGE	PAGE	PAG
Stops, Steam	Tools, Boiler Makers'	Valve Refitting Machines 7
Stops, Rough	Tools, Machinists' Fine 163	Velocimeter
Stop Valves 41	Tool Bag 86	Vernier Calipers 16
Stove, Brass Founders' 127	Tool Holder 170	Vise, Hand 9
Stocks and Dies, Blacksmiths' 117	Tongs, Blacksmiths'118	Vise, Howard 9
Stocks and Dies, Grant's 113	Tongs, Rail 146	Vise, Hall's 9
Stocks and Dies, Morse Twist 115	Throttle Valve 41	Vise, Leg 9
Stocks and Dies, Prentice 115	Torch, Locomotive	· Vise, Merrell's 9
Stocks and Dies, Reece's 114	Torch, Plumbers'	Vise, Parker's 9
Stocks and Dies, Lightning 114	Tuyeres	Vise, Planer
	Tube Brushes	Vise, Penfield
•		<u> </u>
Soldering Copper	Tube Expanders	
Squares 168	Tube Cutters	Vise, P. Wright
Squares, Try t68	Tube Scrapers	Vise, Stephens' 9
Stump Pullers 149	Tubing 51	Vise, Simpson's
Suction Baskets 40	Tubs, Coal151	Vise, Smith's So
Syphons for Gauges 4	Trucks 150	Vise, Solid Box
Shaper, Hand or Power 190	Tin 190	Vise, Union 86
Seals, Metallic 188	Turnbuckles 182	Valves, Star 191
Steel 190		Valves, Patent Check
Spelter 190	Universal Drill	Valve Seat Planer 189, 190
Screws, Cap	Unions, Brass 54	
Screws, Set 179	FT : 501	Waste 159
Screws, Lag 182	TT C 11	Water Gauges
· •	Unions, Soldering 54	Water Stations 31
Screws, Machine		Water Columns 31
Studs 179	Valves, Angle 43	Washburn Chucks 106
	Valves, Ayres 46	Washers, Rubber
Tank Valve 31	Valves, Air 41	Washer Cutters
Track Jack 144	Valves, Balance 41	Watchman's Clocks
Track Chisels 146	Valves, Back Pressure 41	Wheelbarrows
Track Drills	Valves, Ball	
Track Gauge 149	Valves, Butterfly 41	Wrenches, Screw 9-
Track Brooms	Valves, Cam	Wrenches, Gas Cock
Tackle Blocks 151, 152	17 1 01	Wrenches, Basin
Traps, Steam	77 1 O1 1	Weighing Machines
		Weston's Ratchet Drills 95
Trammel Points	Valves, Cross	Westcott Chuck
Taps, Machinists'	Valves, Eddy 44	Wire 156
Taps for Machine Screws 116	Valves, Foot	Wire Cloth 156
Taps, Blacksmiths'	Valves, Globe	Wire Cutter 16.
Taps, Nut 116	Valves, Governor41	Wire Gauge 16
Taps, Pipe 85	Valves, Hose	Wire Rope 15
Tap Borer 86	Valves, Jenkins' 43	Wire Straightening Machine
Tapping Machines 87	Valves, Ludlow's 45	Wire Shears 16
Tape Measure 172	Valves, Manifold 58	Wicking 7
Test Pumps 6	Valves, Newport 46	Whistle Chimes
Thermometers 10	Valves, Peet	Whistles, Steam
Timber Jacks 145	Valves, Pump 40	Whistle Valves
Twist Drills 101	Valves, Register 41	Window Brushes
Tire Plates	Valves, Russell	
Tire Bender	Valves, Stop41	Whiton's Chucks
Tire Upsetter		Whiton's Drill
•		Worcester Drills
Tools, Machinists'	Valves, Throttle41	Water Coolers 18
Tools, Blacksmiths'	Valves, Tank 31	Washers 18
Tools, Molders'	Valves, Vacuum 41	Wrench, Eureka Combination 18
Tools, Pipe 78	Valves, Safety 41, 42	Zinc 19
Tools, Plumbers'	Valves, Patent Safety 42	Zinc



SCOTCH GLASS TUBES,

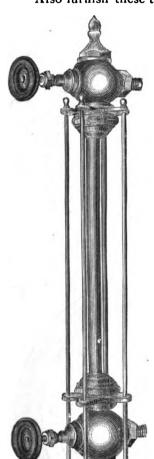


FOR WATER GAUGES.

Length, Ex. Diam.,	10	11	12	13	14	15	16	17	τ8	19	20	23	24	30	36	48
½ in.					;	Same pi	rice as	corresp	onding	length	of 5/8 to	ubes.				
5/8 " 3/4 " 7/8 "	\$ 4 80	4 80	5 40	5 40	6 oo	6 60	7 20	7 80	8 40	9 00	960	10 80	12 00	16 00	20 00	24 00 36 00
3/4 "	6 60	6 60	6 60	6 60	7 20	7 20	7 80	8 40	9 00	9 60	10 20	11 40	12 60	18 00	24 00	36 00
7/8 "·	8 40	8 40	8 40	8 40	8 40	900	9 60	10 20	10 00	11 40	12 00	15 00	18 00	24 00	30 00	40 00
ı "	10 80	10 80	10 80	10 80	10 80	10 80	10 80	11 40	12 00	13 20	15 co	18 00	24 00	31 20	39 00	00,00

These Gauge Glasses are imported by me direct from Perth, Scotland, and are warranted genuine and equal to any in the market.

Also furnish these tubes closed at one end, for special purposes.

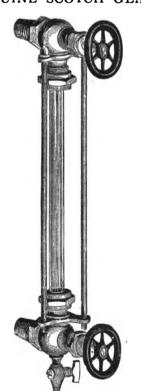


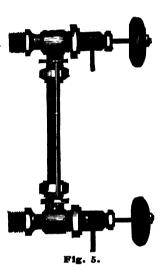
RUBBER WASHERS, to fit Tubes for Water Gauges,

all sizes.....60 cts. per doz.

WATER GAUGES,

WITH GENUINE SCOTCH GLASS TUBES.





Water Gauge and Gauge Cocks Combined.





			Fig. 3.									rig.	4.					
Fig.	3.	A,	Screwed	for	1/2	inch	pipe-	-5⁄8	glas	s							 	\$ 5 0 0
-	-	В,	46	"	1/2	"		5/8	- "									7 00
		C,	"	"	3/4	66	"	3/4	66								 	10 00
		D,	"	"	3/4	44	"	3/4	66								 • • • • •	12 00
Fig.	4.	Ε,	"	"	1/2	46	"	5/8	"				. .				 	7 50
_		F,	"	"	3/4	"	66	5/8	"								 	10 00
Fig.	6.	G,	"	"	3/4	.6	"	5/8	"	Self	-closi	ng v	vhen	glass	breal	ζs	 	6 oo
J		Η,	"	"	3/4	"	"	5/8	46	"	44		46	"	"			9 00
		I,	"	66	3/4	66	"	5/8	66	"	66		"	"	**	••••	 	12 00
		J,	46	6	3/4	"	"	5/8	"	"	"		44	66	"		 	18 00
Fig.	5.	K,	44	"	1/2	66	"	<i>.</i> .									 	£7 50
3	•	L.	"	"	3/4	"	"										 .	9 00
		M,	66	"	3/4	44	"						• • • •				 	12 00



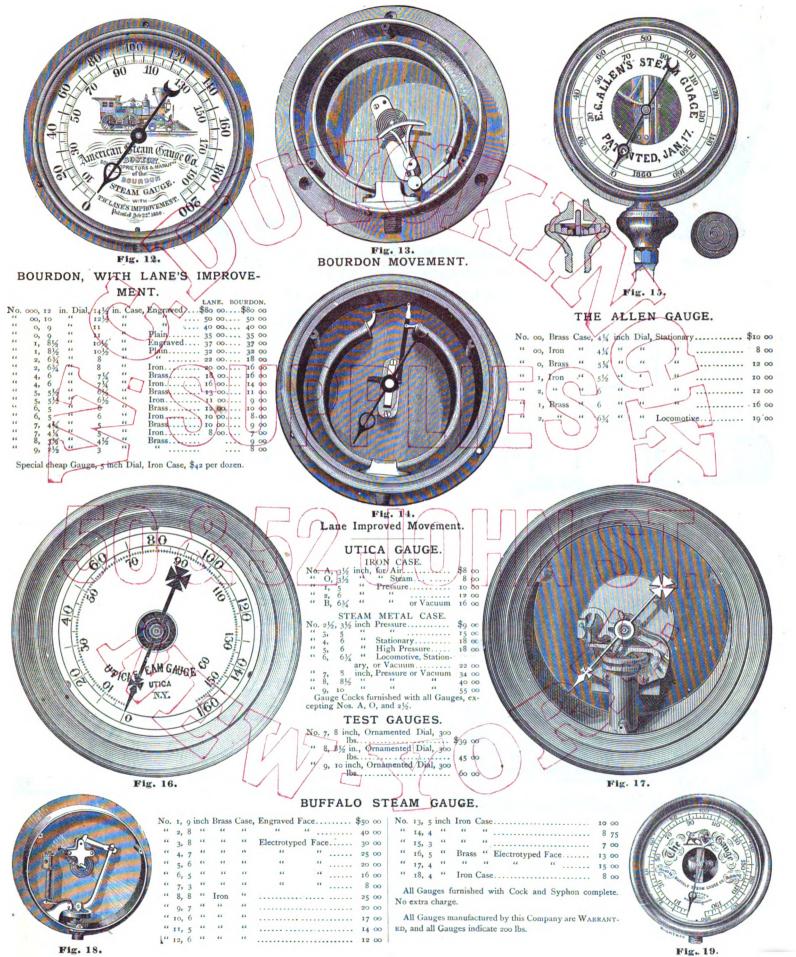
STEAM AND VACUUM GAUGES.



2, 6¼ " " " 30 00

Fig. 10.

AMERICAN GAUGES.



EASTMAN STEAM GAUGE.



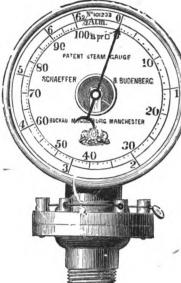
Fig 20.

Gauges, 8 inch Dials, indicating different pressures, namely: 100 lbs., 130 lbs., 150 lbs., 190 lbs., and 200 lbs.

Silvered Gauge	\$30	oc
Brass "	23	00
Iron Round Gauge	2 I	ÒO
Iron Gauge	τo	00

Including Stop-Cock and Connecting Union.



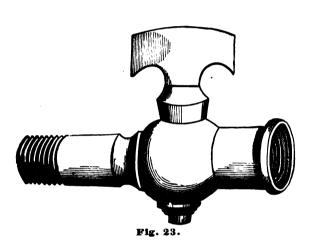


SCHAEFFER & BUDENBERG.

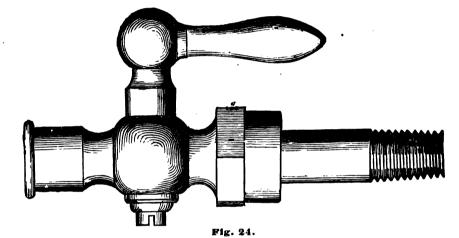
(IMPORTED.)

1½, 2, 3, and 4 inch
Dial\$10 ∞
6 inch, 200 lbs 12 00
6 " Vacuum 12 00
6 " Back Pres-
sure, 5 lbs 12 00
6 inch, Vacuum and
Pressure com-
bined 15 00

COCKS FOR STEAM GAUGES.



Finished, per dozen, full size \$12 00

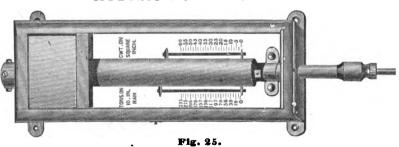


Ground Joint, per dozen, full size.... \$24 o

HYDRAULIC GAUGES.

12	inch	Dial,	Brass	Case,	2000 to	20,000	lbs	\$125 0	00 6	634	inch	Dial,	Brass	Case,	2000	to 10,000	lbs	\$50 0 0
10	"	**	**	**	2000 to	20,000	"	. 100 (00 6	634	**	"	Iron	"	2000	to 10,00	· "	45 00
9	**	**	**	**	2000 to	20,000		. 85 0	oo ¦ (6	**	• 6	Brass	"	1000	to 6,00	o "	40 00
83	<u>'</u> "	**	**	**	2000 to	16,000		. 80 0	00 (6	"	"	Iron	**	1000	to 6,00	o "	30 00
8 1	6 "	**	Iron	•	2000 to	16.000	"	. 70 (00 6	63/	44	"	Brass	44	500	lbs		25 00

HYDRAULIC INDICATOR.



STEAM GAUGE SYPHON.

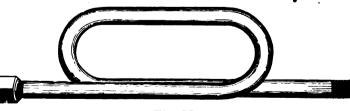


Fig. 26.

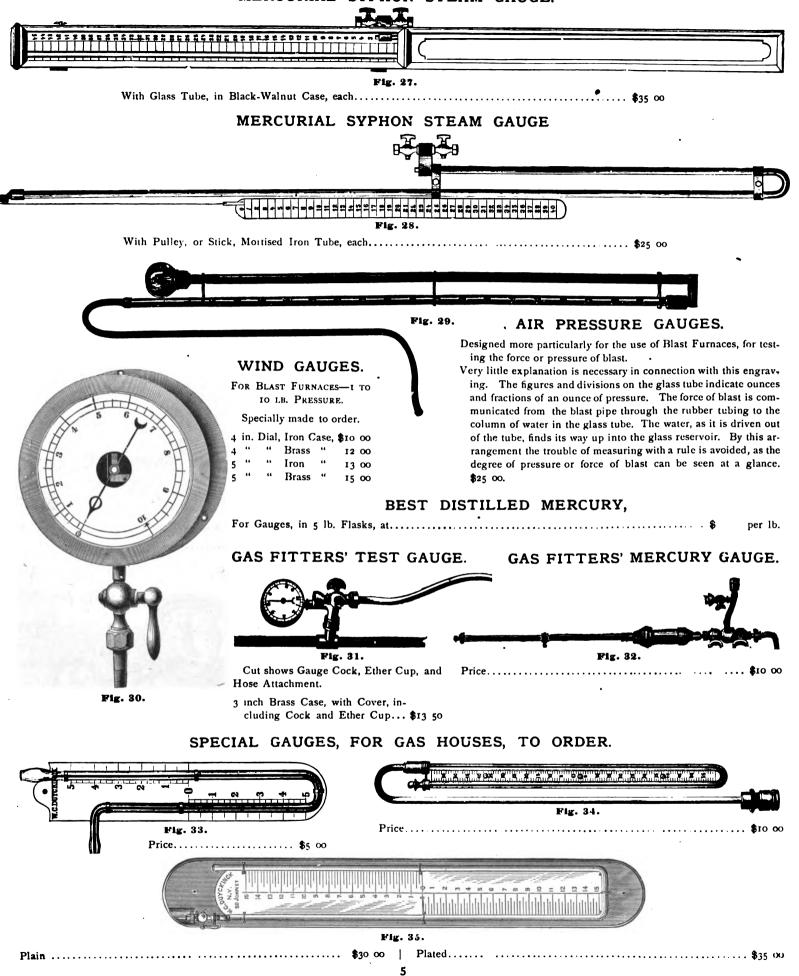
SPECIALS.

Maximum Hands applied to Gauges, when desired, at ... \$5 00 per gauge. | Name and Address of parties put on Gauge Dials at.... \$3 50 per dozen.

Gauges of all kinds repaired or tested on the premises, by experienced men, and guaranteed for one year.

Gauges for special purposes made to order.

MERCURIAL SYPHON STEAM GAUGE.



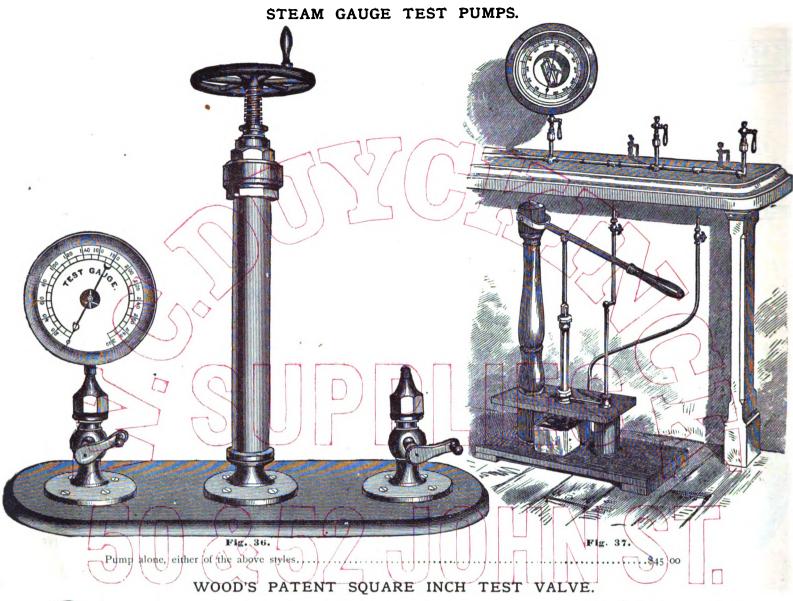


Fig. 2

Fig. 38.

Price of Apparatus as shown in Figure 2... \$18 oo

We also furnish a Cheap, but Complete Test Pump, to be used with this square inch Valve. It is fitted with a reservoir for water, and connections for the Valve and

With Test Valve complete\$25 00

Without Valve, with connections for two Gauges, 10 00

Fig. 1 shows the way in which the Test Valve may be connected with any force pump. In the cut it is shown with the weighted yoke in place. D is the pump, with the reservoir of water lat D.—By turning the wheel the water is forced into the Test Gauge, E, and beneath the valve, and also in the gauge to be tested, which is placed at F. The pieces of iron attached to the yoke have been previously weighed so that the valve must lift and the water escape by the overflow pipe, G, the moment such known weight is exceeded by the water pressure. The gauge or gauges should then indicate a pressure equal to the combined weight of the valve, yoke and weight attached to the valve.

Price of Apparatus as shown in Fig. 1, excepting the Test Gauge, with a Walnut Chest, in which the whole is packed.....\$85 oo

Or with Brackets to go against a wall, or on a stand with iron legs, but no chest and no gauge 75 00

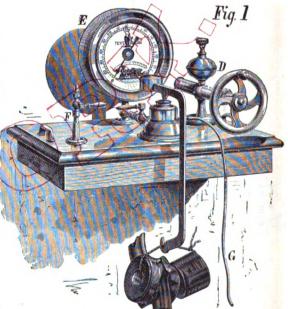
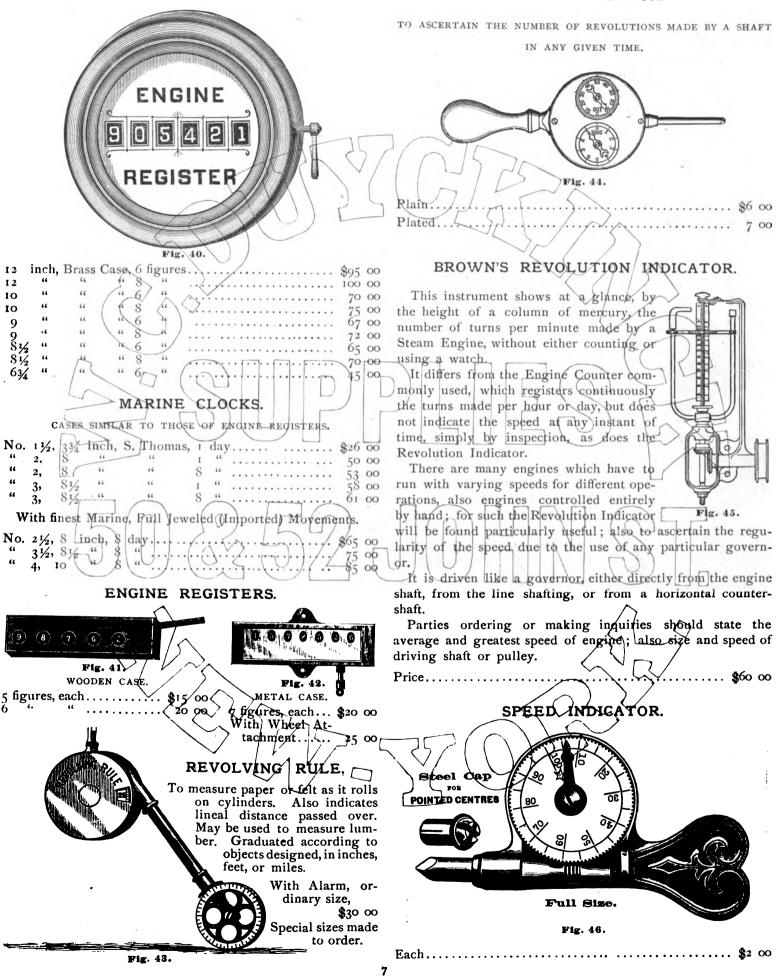


Fig. 39.

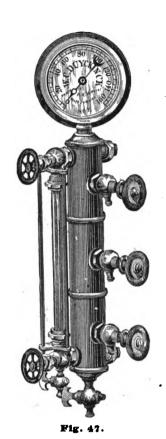
Fig. 2 consists of a brass base, provided with a pipe, A, to be connected with a pump. At B is a hardened steel valve and seat, the latter having knife edges for the valve to rest upon, and being made exactly one square inch in area. The valve is guided by a guide-stem in the seat. The water pipe, A, opens directly under the valve, as shown by the dotted lines. The valve when in place, makes a tight joint with the knife edges, and the pressure beneath is confined until it exactly balances the combined weight of the valve, yoke, C (which rests by a pointed projection on the valve), and any extra weight which may be suspended from the lower hook of the yoke. With this the accuracy of a gauge, at any specified point of its registry, can be ascertained.

ENGINE REGISTERS.

SPEED INDICATOR.



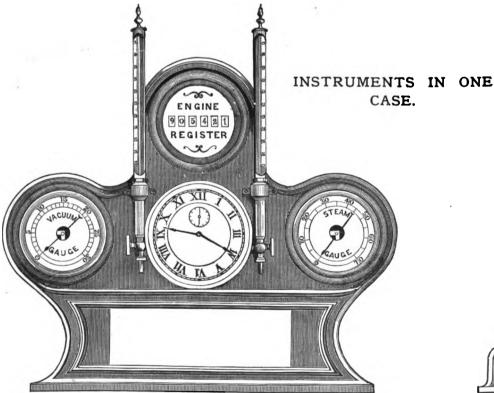
COMBINATION COLUMNS.



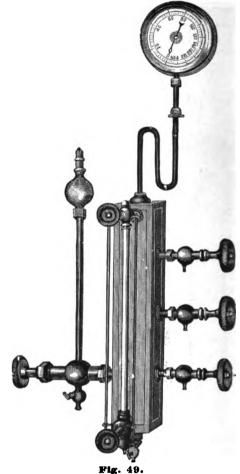
Complete as above, \$15 00



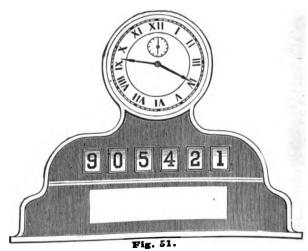
PATENT GAUGE COCKS AND WATER GAUGE COMBINED. With Steam Gauge Attachment,..... Without Steam Gauge.......\$9 and \$12 00



One case containing six Instruments, \$300 00



No. A includes No. 7 Gauge, 36 Gauge Cocks, and Water Gauge, but no low water detector. (Round body).....\$18 00 No. B includes No. 6 Gauge,
½ Gauge Cocks, and Water
Gauge, but no low water detector. (Square body)..... 25 00 No. C includes No. 4 Gauge, ½
Gauge Cocks, Water Gauge
and Low Water Detector. (Octagon body)..... 50 00



Engine Register with Clock or Gauge, \$100 00

RICHARDS PARALLEL MOTION INDICATOR.

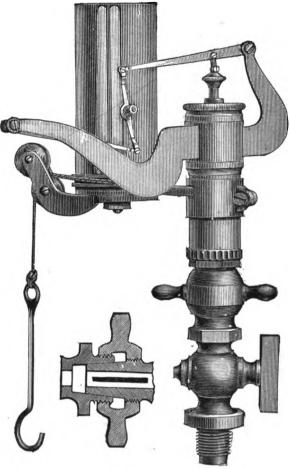
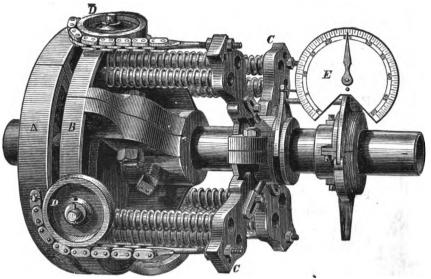


Fig. 52

Indicator, with one Spring, Scale, and Cock													
Extra Springs and Scales, 12, 16, 24, 30, 40, 60, each													
Extra Cocks "	2	75											
Elbows		50											
Carrying Pulleys	I	00											
Parallel Rule		တ											
Clamps	3	00											

A Treatise on the Indicator, by F. W. Bacon, M.E., and Member of Society of Civil Engineers, furnished with each Instrument. For sale separately. \$1 00.

NEER'S ROTARY DYNAMOMETER.



Mig. 53.

This Dynamometer will show at any moment the amount of power being used from the shaft to which it is attached; or the capacity of any engine or water-wheel; or the necessary power required to propel any machine. Also the adhesive or comparative power of various kinds of belting. It will also indicate any friction caused by irregularities of shafting, etc. It also enables the public to deal in motive power as in other property, by actual weight or measurement, and with certainty and accuracy.

All are made to move a resistance equivalent to elevating thirty-three thousand pounds one foot, with one hundred revolutions per minute, each revolution being one per cent of what is indicated on the dial; for each revolution over one hundred, add one per cent to what is indicated, and deduct for any number less.

20-	horse-	—fits	2 1/2	inch	Shaft	, eac	:h	\$ 175 00
50	"	"	3	44	"	"		250 00
100	"	**	3 to	0 4 i	nch sl	haft,	each	325 00
150	44	"	4 to	0 5	**	• •	"	400 00

With 1-16 inch packings to reduce each size shaft one inch.

DIRECTIONS FOR APPLYING THE DYNAMOMETER.

After removing the set screws or key of the pulley to be used, see that it is free on the shaft; place the first disk true and firm upon the hub, then notice which way the force is to be exerted, and bring the chains the way they are to be used, and set up the nuts before placing the other disk; then place it firm to the shaft, and see that there is no bind between them; bring the disks in position, and place the curved stop on the disk so as to receive the stud of the other disk; place the springs and cross-arm, and bring the chains around the rollers, on a line with the shaft; bring the cross-arm gently against the springs, and set up the nuts with the finger and thumb until they bring the cross-arm against the springs without compressing them; set up the jamb-nuts with a wrench; see that the chains have no twist; when you have placed collar and dial, see that it works freely, and fasten the dial frame to prevent it from revolving; oil all the working parts.

We prepare collar and bridges, where needed, to apply the Dynamometer at couplings,

removing the bolts.

The Duckham Patent Suspended Self-Indicating Weighing Machine.

Capacities, from one to one hundred tons.

This machine is used on a crane, or any lifting apparatus, and indicates the weight on the dial directly the article is lifted. It is accurate, requires no adjusting, portable, and the greatest labor-saving weigher ever introduced.

Capacity of 100 50 Machine, tons, Smallest w'ght) 100 100 100 200 indicated, lbs. Weight of Ma-) 40 50 50 70 95 180 250 450 600 chine, lbs. Price, boxed... \$120 120 120 150 190 240 310 475 650

DYNAMOMETER.

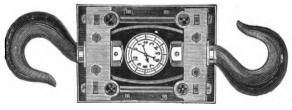


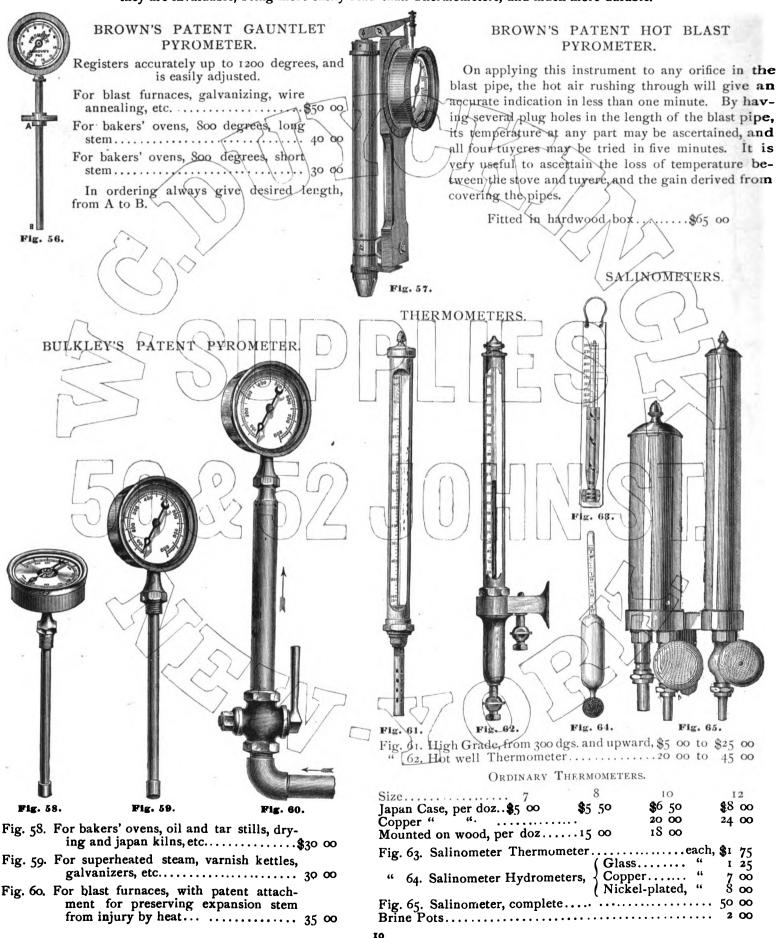
Fig. 55.

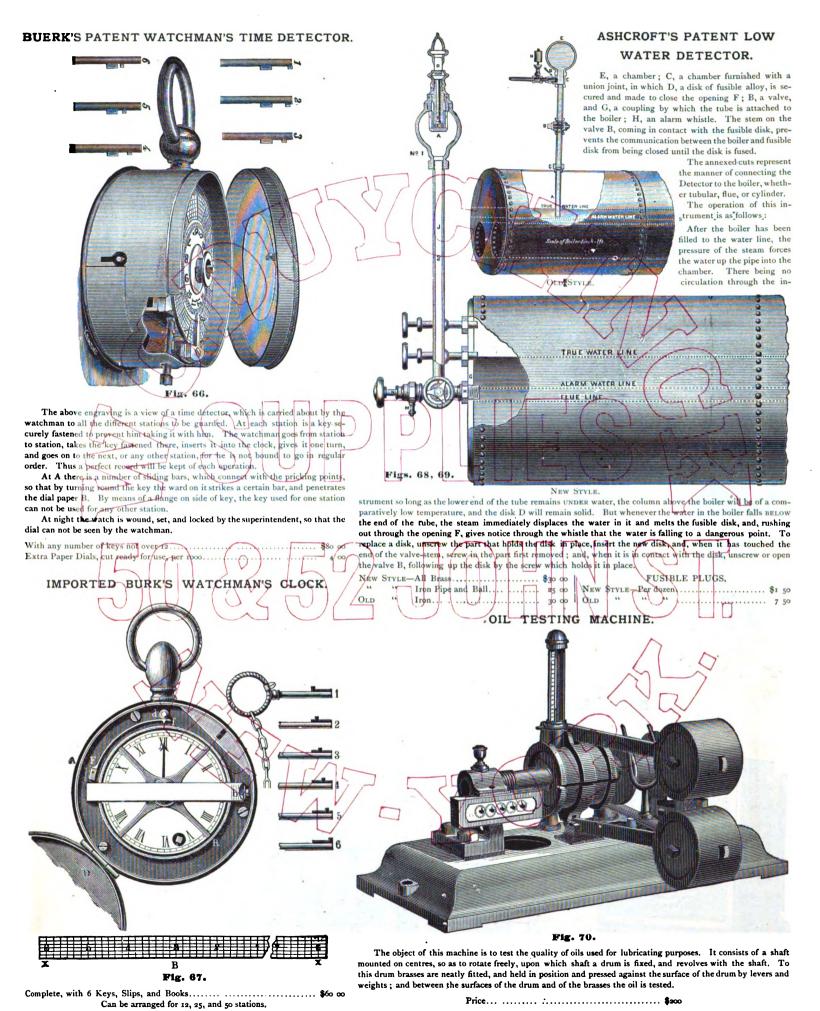
Two solid curved steel bars, which act as springs, are shown in the drawing. The weight or strain applied has the tendency to straighten these springs, and the slightest motion of the same is multiplied and transferred by a suitable arrangement to a pointer, which indicates the correct weight on the dial. Two strong rods placed outside the springs, moving loosely in their joints, act as safeguards in case the springs break.

Price...... \$300 00

PYROMETERS.

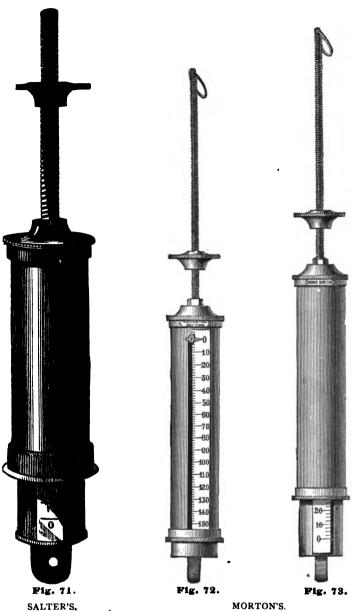
For Blast Furnaces, Galvanizers', Drying and Bakers' Ovens, Oil Stills, Vulcanizers, Superheated Steam, Boiler Flues, etc., they are invaluable, being more easily read than Thermometers, and much more durable.





Digitized by Google

LOCOMOTIVE SPRING BALANCES.



SALTER'S. MORTON'S.

Imported direct, each, \$12.00 Lbs..... 50 75 80 84 96 100 150 200

" " 15.00 Per dox., \$70.00 85.00 95.00 100.00 110.00 130.00 150.00 165.00

CRAWLEY'S VELOCIMETER.



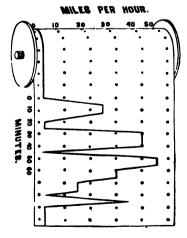
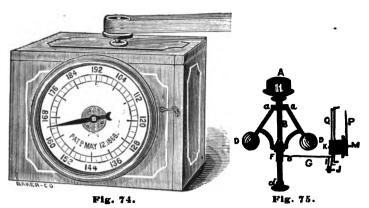


Fig. 76.

This Instrument will measure, and record on paper, the velocity of all Locomotives, Road-Vehicles, Revolving Shafts, Pumping Engines, Water-Wheels, Running Belting, Reciprocating Engines, etc., etc., to which it may be properly attached, and give the time and duration of all stoppages, and the aggregate amount of work done in any given time.

BOWSHER'S POWER OR MOTION INDICATOR.



WHAT IT WILL TELL.

When applied to the millstones it will tell when there is any change in the feed, or in the condition of the grain, or if the spindle is heating; in fact, any thing that goes to affect the grade of the meal. (Several instances have been reported to us where the Indicator saved the spindle from being thus ruined, as well as from its other consequent damages, by giving its timely alarm.)

damages, by giving its timely alarm.)

When applied to the machinery of a mill, it will tell when a belt is thrown off or on, an elevator or conveyer choked or broken, or any thing that affects the motion. Too much importance can not be attached to the steady running of mill machinery, and especially that of wheat cleaning, bolting, purifying, etc., etc.

When applied to the machinery wheel, it will tell when the motion of the waterwheel is increased or diminished by the rise or fall of the head, and when the steam is getting too high or too low in the boiler of the engine.

Single	Dial I	ndicato	or	\$ 25	00
**	**	**	with Alarm Bell	27	50
Double	Dial	Indica	tor	30	00
**	**	**	with Alarm Bell	32	50
		No	extra charge for Pulleys.		

FIGURES ON DIAL PLATE.

The Dial Plate is so graduated and figured on each machine that it will tell the speed of any shaft to which it is attached, as follows, namely—on a

Масн	INE,	SPE	ED.			TELLS	тнв	SPEED,	
No.	F	rom 4	to	8	Within	⅓ of a	revol	ution per	minute,
	2		to	12	**	1/8	**	** -	**
	3	" 7	to	14	**	1/8	**	**	**
	4	" á		16	**	1/8	**	**	**
	5		to	18	**	1/4	**	**	••
	5		to	24	**	1/4	**	••	**
	7		to	28	**	X	**	**	**
	B		to	32	**	KKKKKKK	**	**	**
	2		to	36	**	Ŷ.	**		**
	5	" 21	to	42	**	X	**	**	**
	I		to	48	**	Ŷ.	**	**	**
	2		to	56	**	34	**	**	**
	3	" 32		64	**	1/4	••	**	**
	4		to	72	**	X	**	**	**
	5	" 42		84	**	¥3	**	**	**
	6	" 48		96	**	1/2	"	**	**
	7		to	112	**	ī		**	**
	в		to	128	**	1	**	**	••
	9	" 72		144	**	ī	**	**	••
	0	" 84		168	**	I	**	**	**
	1		to	102	**	1	**	**	**
	2	" 112		224	**	2	**		**
	3	" 128		256	"	2	**	**	**
	4	" 144		288	**	2	**	**	**
	5	" 158		336		2	**	**	**
	6	" 192		384	**	2	**	**	**
	7		to	448	**	4	**	**	**
	8		to	512	**	7	**		**
	Q	288		576	**	į.	**	**	**
	o	" 336		672	**	À.	**	**	**
	1	" 384	to	768	**	į.	**	**	
	2	" 448		896	**	ė.	**		**
		" 512		1024	**	8	**	••	**
	3			1152	**	8	**		**
	5			1344	**	8	**	**	
				1536	**	8	**	**	**
				1792	**	16	**	**	**
" 3	7 · · · · · · · · · · · · · · · · · · ·			2048	**	16	**	**	**
				2304	**	16	**	**	**
	9 0	" 1344	to	2688	**	16	**	**	**

This can be continued so as to show any rate of speed desired.

EXPLANATION.

The first column of figures represents the number of the machine.

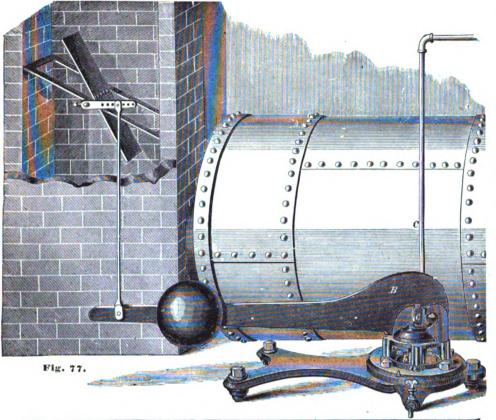
The second, the number of revolutions, per minute, of the shaft to which it is attached, when the machine begins to indicate.

The third, the greatest number of revolutions, per minute, the shaft makes when the machine ceases to indicate.

The fourth, how nearly the speed is plainly figured and shown on each dial plate, respectively.

EXAMPLE.—Suppose the average or working motion of a shaft to be 76 revolutions per minute; No. 16 machine would be most suitable, the figures on the dial plate of which run from 48 to 96, and it shows the exact number of revolutions (with ½ a revolution,) per minute, when the shaft is making over 48 and less than 69.

STEAM AND FIRE REGULATORS.



In estimating the Horse Power of Boilers, 10 square feet of heating surface for plain Cylinder Boilers and flue)

12 " " " (fire and flue) " ed equal to 1 horse power.

CLARK'S IMPROVED STEAM AND FIRE REGULATORS.

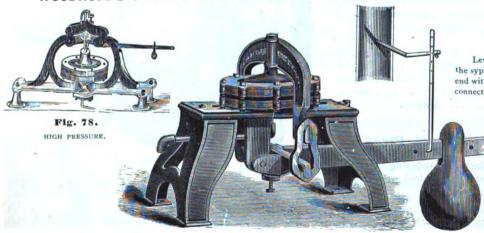
No.	1—	U	nde	5	Н	orse	Powe	r Boiler	, High	Press	ure					 				00
	2-	F	rom	10	to	20	Horse	Power	Boiler,	High	Pressure					 		 	 . 40	00
	3 -			30	to	500		**	**	**	**					 		 	 . 50	00
	4-			30	to	500	E		**	Low	**					 			 . 75	00
										rp)	No. Each.	1		2		3				
					DI.	APF	IRA(MS F	K SAM	1E. }	Each.	\$1.2	5	2 0	0	2 (00			

FRICTION ROLLS AND STAND FOR FLUE, per set, \$6 00.

KNOWLES' PATENT.

	2—Up to 4 Horse Power	
**	3—From 4 to 20 Horse Power	40 00
	4— " 20 to 50 " "	
**	5-50 Horse Power and over	75 00
	•	

WOODRUFF'S PATENT BALANCE DRAFT REGULATOR.



• Fig. 79.—LOW PRESSURE.

No.	I	2	. 3	4	5	6
Horse Pow	er, 4	4 to 8	8 to 20	20 to 50	50 to 100	100 to 200
Each,	\$25 00	35 00	45 00	55 00	65 oo	75 ∞
					13	

DAMPER REGULATOR.

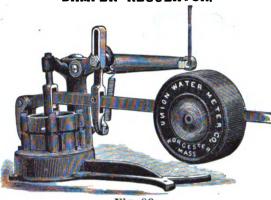


Fig. 80.

No. 1, each... \$30 00 | No. 2, each... \$50 00 | No. 3, each... \$100 00

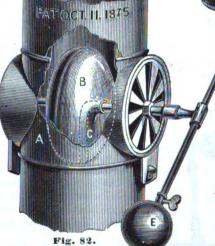
DAMPER REGULATOR,

FOR LOW PRESSURE BOILERS.



The above is a Damper Regulator for low pressure boilers, to be applied in dwellings, etc.

"ACME" AUTOMATIC DRAFT REGULATOR.



Lever D is a continuation of the syphon pipe, weighted at one

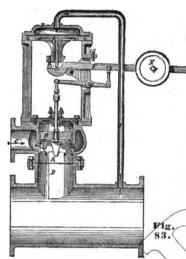
end with the weight E, at the other end with the metal receivers F, and all in connection with the valves in the collar A.

The action is as follows: with a moderate amount of heat passing up the chimney, the water in the boiler B remains at or near the boiling point, and the valves remain closed, but as soon as the volume of heat is materially increased, steam is generated, which forces a portion of the water through the syphon pipe C into the lower metal receiver, which partially overcomes the weighted end, and the disk descends, partially opening the air valves in the smoke pipe, admitting a current of cold air, which serves to reduce the force of the draft in like proportion. Any further increase in the volume of heat passing into the smoke pipe will likewise increase the steam pressure, forcing a greater weight of water into the receivers, and opening the air valves wider, and reducing the force of the draft to its lowest point necessary for combustion.

As soon as the fire is checked and the smoke pipe cools, the water gradually returns to the boiler, reversing the action.

Inches,	5	6	7	8
Each,	\$ 7 50	8 00	9 00	10 00

IMPROVED PRESSURE REGULATOR.



This apparatus is designed to regulate the pressure of steam, air or other gases, or fluids in their flow from the generator or from one vessel to another, wherever it is desirable to maintain a certain continuous lower pressure in the tanks.

It may therefore be employed to great advantage in boiling or distilling with steam at a constant pressure or temperature, as is desirable in boiling sugar or glue, or distilling oils, etc. Also in heating with steam generally at any desired constant temperature, such as in drying rooms, houses, shops, railroad cars, etc.

It may also be employed in regulating the motion of engines where the pressure of steam is subject to variations, as this Regulator when applied to an engine may be adjusted so as to supply it with any desired constant pressure.

Also, wherever it is necessary or destrable to highly compress gases or steam into tanks, from which they have to be discharged afterward at a comparatively low uniform pressure.

Also, when fluids of high or variable pressure or height

have to be discharged with comparatively slow uniform speed.

It may also be applied as automatical governor for air-compressors, worked by a steam engine, or of steam pumps generally, and for numerous other purposes.

From the following description of the apparatus, its manifold application may be easily understood.

The sleeve R within the valve-chest A constitutes a balance throttle valve; C being the inlet of the gases or fluids and D the outlet. The inlet C is always connected with the boiler or receiver in which the higher or variable pressure exists, and the outlet D is connected with the pipes or the receiver, within which the lower or constant pressure has to be maintained

This throttle valve is, by means of compound levers, as easily understood from the drawing, connected to the disk E, which rests with a steel pin on the lever F, and moves freely within the top-flange G. An india-rubber diaphragm which is inserted between the flange G and the cap H lies loosely on the disk E. There is finally an open communication with the upper side of the diaphragm and the valves D, by the pipe J.

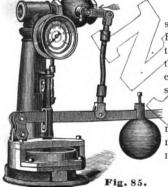
The apparatus is ready for operation when the weight K is located on its lever so as to counterbalance the disk E, when acted upon by the desired constant pressure.

The operation is now the following:

As soon as the communication with the boiler or high-pressure tank is opened and the pressure on the outlet D has accumulated to the desired amount, the disk E is forced downward, which motion closes, by means of the levers and the sleve B, the inlet very quickly, interrupting the flow from the boiler, which will only open again as the pressure at the outlet decreases somewhat below the desired constant amount, as the disk E will then be forced upward by the weight K; thus the pressure in the outlet D will be kep constant.

Each, \$175 and \$250.

B. FITTS' STEAM PRESSURE REGULATOR.



These machines are for reducing the pressure of the steam used in Dressing-Rooms, Dye-Houses, Slashers, Bleacheries, and on Paper Machines, Heating Coils, etc., to any desired point below the pressure of the steam in the generating boiler, and also serve, when once adjusted, the further desirable and more important purpose of systaiging that pressure at a uniform point.

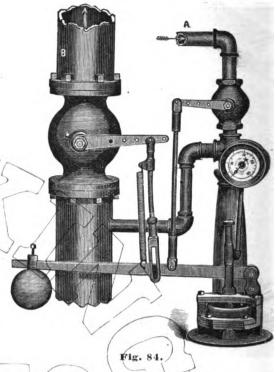
WATER PRESSURE REGULATOR FOR SERVICE PIPES.



This can be adapted to reducing the pressure on the pipes to any desired point below that on the main.

· ¾	"				25 00
I	**			· · · · · · · · · · · · · · · · · · ·	35 OO
2	"	• • • •	· • • • • •	· · · · · · · · · · · · · · · · · · ·	85 00

BACK PRESSURE REGULATOR.



This Regulator is for controlling steam in heatingpipe where exhaust from an engine is used. Its operation is such as to keep the back pressure on the
engine uniform, at any pressure that may be desired.
B represents the exhaust to the air to fet off an overpressure. A is a pipe for letting in live steam, so as to
keep the temperature and pressure uniform in the
heating-pipes when the engine is not running or the
exhaust is insufficient. The Regulator is arranged to
control the live steam as well as the exhaust.

WATER PRESSURE REGULATOR.

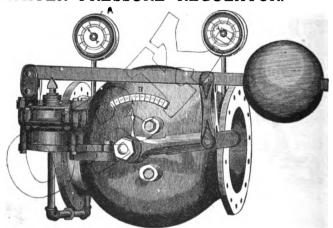


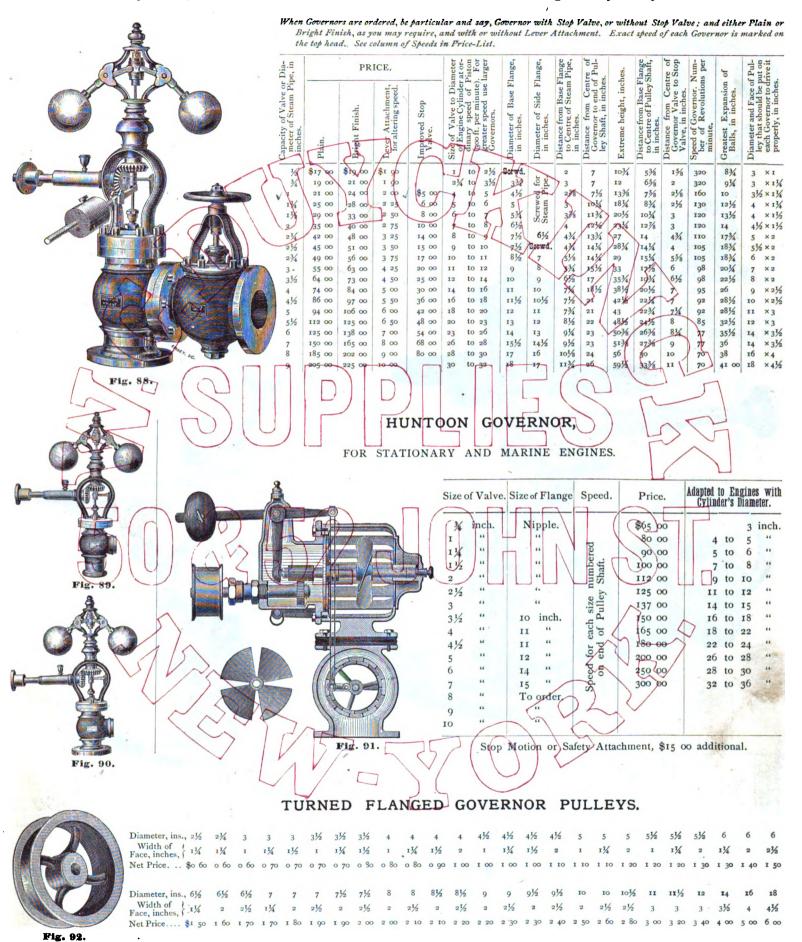
Fig. 86.

This is an apparatus for reducing and regulating the pressure in any system of water-works between what may be termed a high and low service.

This valve is serviceable wherever the head wants to be broken, either on a line of pipe or between a system of pipes.

10	in.	with full	attach'ts of	gauges,	index,	and telegra	ph alarm,	\$500
8	**	44	**	**	"	"	"	400
6	"	**	**	"	"	**	"	250

JUDSON PATENT IMPROVED GOVERNORS.—See Figs. 88, 89, and 90.



THE SHIVE STEAM ENGINE GOVERNOR.

of oe.	D.	E	XTR	A FOR		of of	of Se.	of of	ige to	to to	to to	o to		ي بد	! ≘ .
Diameter of Steam Pipe. BLACK.	FINISHED	BALL AND LEVER.	SPEEDER.	Automatic Safety Check.	STOP VALVE.	SIZE. Diameter of Steam Pipe.	Diameter Base Flang	Diameter of Side Flange.	Base Flange to Centre of Steam Pipe.	Centre of Governor to Side Flange.	Centre of Governor to End of Shaft.	Base Flange Centre of Shaft.	Extreme Height.	Greatest Spread o Balls.	Average Revolutions
1 33 1 4 40 1 ½ 45 2 57 2 ½ 70 3 83 3 ½ 96 4 109 4 ½ 120 5 136 6 173		3 00 3 25 3 50 4 00 4 75 5 50 6 25 7 25 8 00 8 75 9 50	\$3 75 \$4 \infty\$ \$4 \infty\$ \$5 \infty\$ \$5 75 \$6 50 \$7 25 \$8 25 \$9 \infty\$ \$10 \infty\$ \$11 \infty\$ \$12 \infty\$	\$8 00 9 00 10 00 11 00 12 50 14 50 16 00 17 50 19 00 22 50	\$3 75 5 00 5 75 7 50 11 00 23 50 30 00 37 00 42 00 53 00 69 50 92 50	ins. 14 11/4 11/2 21/2 31/2 4 41/2 5 6	ins. 4 43/4 6 7 7 7 4 9 9 10 10 10 12 13 15 16	ins. 3½ 4¼ 5¼ 6½ 75% 8½ 9% 10 11	ins. 11/4 21/2 25/8 31/6 3.74 45/8 55/4 66/8 77/4 85/8 99/4	ins. 2 2 3/4 4 4/2 5/4 6/2 6/4 7/2 8 8/4 10/8	ins. 81/2 91/2 101/2 111/2 131/2 15 15 17 17 211/2 25 30	ins. 6 73/8 85/8 101/2 12 123/8 153/8 16 18 20 213/4 223/2 25/2	ins. 13½ 16½ 18½ 22 24½ 26½ 30½ 32 36 38 42½ 47	ins. 10 11 12 14 15 17 19 20 23 23 22 25 27	150 100 100 100 90 90 90 80 80 76 76 70 65

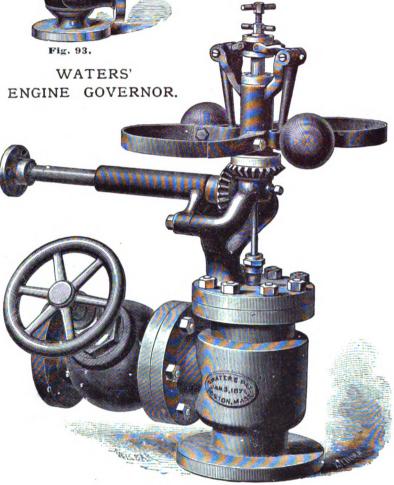


Fig. 94.
PRICE-LIST AND TABLE OF DISTANCES,

Size of Valve, or Diameter of Steam Pipe.	BLACK.	FINISHED.	Diameter of Cylinder suitable for.	Extreme Height	Diameter of Space required.	Dis'ce from Base Flange to Centre of Steam Pipe.	Distance from Centre of Gover- nor to Stop Valve	Dis. from Centre of Gover'r to end of Pulley Shaft.	Diameter of Base Flange	Diameter of Stop Valve Flange.	Speed of Gov'r. Rev. per minute.
ins. 3/4 1 11/4 11/2 2 21/2	\$19 00 21 00 25 00 30 00 35 00 45 00	\$26 00 28 00 33 00 39 00 45 00 56 00	inches. 3 to 4 4 to 5 5 to 6 6 to 7 7 to 8 8 to 10	ins. 13½ 14 16 19 21 24	ins. 9 10 14 18 18	ins. 23/4 3 31/2 33/4 4 45/8	ins. 21/4 23/8 21/4 23/4 3 43/8	ins. 8½ 8½ 8½ 9½ 10½ 13½	ins. 24 4/2/2 0 Aces. 5 6 7 8	%. St'm Pipe.	280 280 260 225 210 210
3 3½ 4 4½ 5 6 7	60 00 72 00 85 00 95 00 106 00 140 00 170 00	75 00 88 00 105 00 115 00 130 00 165 00 195 00	10 to 12 12 to 14 14 to 16 16 to 18 18 to 20 24 to 28 28 to 32	28 30 34 36 38 42 44	22 22 25 25 25 25 34 34	5¾ 6 6¾ 7 8½ 9¾	5½ 6 6¼ 6¾ 7½ 8¼	20 21 22 23 24	9 10 11 12 13 14	7 8 8½ 9½ 10½ 12 13	180 180 160 160 160 150
9 10	210 00 250 00 350 00	240 00 290 00 400 00	32 to 36 36 to 40 40 to 44	50 52 66	40 40 48	12 13 14	11 12 131/4		16 18 20	14 15 16	125 125 100

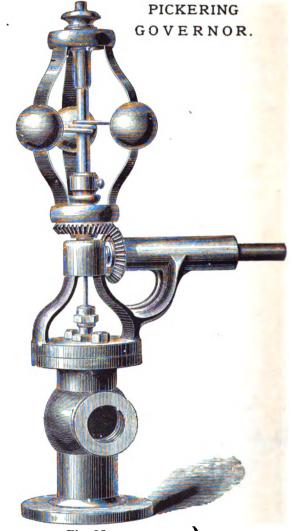


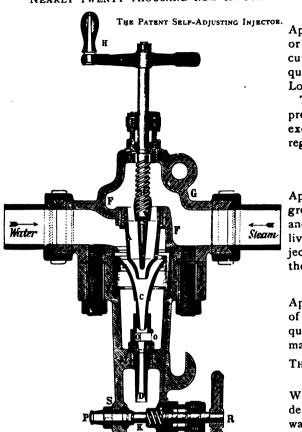
Fig. 95.

SIZE.	Finished.	Plain.	Portable.	Height.	Speed Ad- juster.	Speed Ad- juster and Stop Motion.
inches.				inches.		
1/4	\$20 00	\$18 00	\$18 00	121/2	[i
½ ¾	21 00	19 00	18 00	14		1
1	24 00	21 00	20 00	1814	\$2 00	\$6 50
11/2	27 00	24 00	23 00	20	2 50	7.00
11/2	33 ∞	29 00	23 00 28 00	24 1/4	2 50	8 00
2	39 00	34 00	33 00	271/2	3 00	900
2 2½	52 00	46 00		31	3 50	10 00
3	63 ∞	55 00	İ	36¾ 38½	4 25	12 00
3 3½	72 00	63 00	1	381/2	4 50	13 00
4	84 00	74 00	j		500	15 00
5	105 00	93 00		43 48	600	16 ∞
6	137 00	124 00		52	700	17 00
7	165 0 0	150 00	1	54 56	8 ∞	19 00
8	200 00	184 00	1	l 56	l 900	21 00

GIFFARD'S INJECTOR FOR FEEDING BOILERS.

SELLER'S IMPROVEMENT, SIMPLE, EFFECTIVE.

The efficiency of these instruments has been thoroughly tested by their extended use in this country for the past fourteen years. NEARLY TWENTY THOUSAND NOW IN USE.



THE SELF-ADJUSTING INJECTOR,

Applicable in all cases where a great or sudden variation of steam may occur, and where a great range in the quantity of delivery is required—as for Locomotives.

They lift the water or take it under pressure; when the pressure, however, exceeds ten feet head, one of the water-regulating valves should be used.

THE SELF-ADJUSTING INJECTOR, WITHOUT STEAM SPINDLE,

Applicable in cases where there is great or sudden variation of steam, and great range in the quantity of delivery, and where water flows to injector. Should not be applied where the water is to be lifted.

THE ADJUSTABLE INJECTOR,

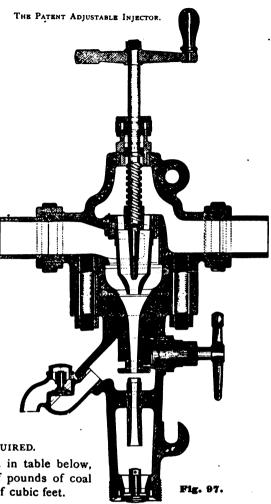
Applicable where no sudden variation of steam occurs, but where range in the quantity of delivery is desirable, as in many cases, for stationary boilers.

THE ADJUSTABLE INJECTOR, WITHOUT STEAM SPINDLE,

Where no great range in quantity of delivery is desired, and where the water flows to injector under pressure.

To Determine Size of Injector Required.

Take the number of cubic feet of water given in table below, as horse power of boiler, or divide the numbers of pounds of coal burned per hour by 7½, which gives the number of cubic feet.



PRICE-LISTS AND TABLES OF CAPACITIES.

THE PATENT SELF-ADJUSTING INJECTOR.

THE PATENT ADJUSTABLE INJECTOR.

o'N		Steam idle.		t Steam idle.	. de .		PF	RESSU	RE OF		AM.	
Size	Brass Body Polish.	Iron Body.	Brass Body Polish.	Iron Body.	Size of Conn tions.	15 Cadic F	eet of W	l 45 Vater per	60 Hour, 0	80 H otse	Power of	
2	\$22	\$18	\$19	\$15	1/2	8	9	10	11	12	14	15
3	30	25	27	22	*	19	22	24	27	30	33	37
4	42	35	39	32	I	35	40	45	50	56	62	68
5	55	45	51	41	11/4	57	64	71	78	87	97	106
6	7ô	55	65	50	11/4	83	93	103	113	126	140	154
7	85	65	8o	60	1 1/2	113	127	141	155	173	191	210
8	100	75	94	69	2	148	166	184	203	227	251	275
9	115	85	108	7Š	2	188	210	233	256	287	318	349
ΙÓ	130	95	122	87	2	232	260	288	317	355	393	431
12	150	115	140	105	21/2	334	375	416	457	512	566	620

PRICES OF STATIONARY ATTACHMENTS.

THE SE	L	r-A	נט	US	111	16	IN	JEC	710	K.		_	_		
Size of Injector. No	s.	2	;		3	İ	4	5	a 6	, 7		8,98	t 10	1:	2
Starting Valve		3 0	00 10 35	3	50 10 35	4	00 10 35	5	00 25 62	6	25 75	9	25 00	14 1	00 25 25

THE ADJUSTABLE INJECTOR.

	•					-							
Starting Valve	\$ 5	00	\$ 6	00	\$7	00	\$8	75	\$10	50 \$	13	50 820	00
Stop Valve Main Check on Boiler Attachment complete	1	80	2	40	3	30	4	20	5	52	7	80 14	10
Main Check on Boiler	I	08	1	32	I	80	2	40	3	12	4	8o	
Attachment complete	' 7	88	۱ ۵	72	12	10	15	25	10	T4 '	26	10	

S.	With Spir	Steam idle.	Withou Spir	ıdle.	è de	PRESSURE OF STEAM.							
3	Brass Body	Iron	Brass Body	Iron	Size Conn tions	15	30	45	60	80	100	120	
SIZE	Finish.	Body.	Finish.	Body.	ود	Cabic	Feet of	Water pei	Hour, or	Horse	Power of	Boiler.	
2	\$22	\$18	\$19	\$15	1/2	7	8	3 9	10	11	12	13	
3	30	25	27	22	34	17	19	21	24	27	29	33	
4	42	35	39	32	I	31	36	40	44	49	56	60	
5	55	45	51	41	11/4	50	56	62	70	77	85	93	
6	70 ,	55	65	50	11/4	. 73	81	90	99	, 110	122	134	
7	85	65	8o	60	1 1/2	99	.101	123	135	151	167	194	
8	100	75	94	69	2	130	146	161	177	199	220	241	
9	115	85	108	7 8	2	165	284	204	223	251	278	306	
10	130	95	122	87	, 2	203	227	252	277	311	344	377	
12	150	115	140	105	2 1/2	292	328	364	400	448	496	544	

PRICES OF LOCOMOTIVE ATTACHMENTS.

Size of Injector. Nos.		3		4	5		6)	7		8	;
Start'g Valve, without flange, polish'd												
" " " plain				00	10 5	ю	10	50	12	75	16	00
Dry Pipe Coupl'g for Start'g Valve, A	I	50	į I	50	1 4	jo.	I	50	I	50	1	50
Starting Valve, with flange, polished	8	00	10	50	13 7	75	13	75	17	00	20	00
" " " plain	. 7	50	9	75	13 0	ю	13	00	15	50	18	00
Main Check Ingress at Bot., without flange, Pol'd	5	50	7	00	8 7	15	8	75	10	50	13	75
" " with " "		75	9	25	10 0	œ	10	00	13	00	16	00
" "horizontal, without ") " " inclined, " " (5	50	7	00	8 7	75	8	75	10	50	13	75
" "horizontal, with " "	6	75	ˈg	25	10 0	ю	10	00	13	00	16	00
Water and Alarm Check Valve		00		50	4 0	ю	4	00	4	50	5	25

Extension Rod, \$3 00. Extension Rod, with Universal Joint, \$6 00. Extra
Fitting for Overflow Valve, for heating, \$2 75.

FRIEDMANN PATENT INJECTORS,

FOR FEEDING BOILERS.

These Injectors are well known and extensively used all over the continent of Europe and in England for feeding Locomotive, Stationary, and Marine Boilers, and have been adopted by all the principal Railroads of these countries, over twelve thousand of them being

We have made some little change in their exterior model, to correspond with American ideas of taste, and we now present an Injector second to none in external appearance, and equaled by none in working power and capacity,

Among the advantages possessed by these Injectors are the following :

They start promptly, even with less than five pounds pressure on the boiler, and as high as two hundred pounds.

Do not lower the boiler pressure when feeding Feed warm water at high and low pressure.

Deliver more water, with less steam, than any others.

Have no movable parts to get out of order.

A valve in the overflow prevents the admission of air into the boiler.

The tender water can be heated through it without separate cocks or pipes, etc. No special skill required to operate them.

These superior advantages are chiefly owing to the admirable internal construction of these Injectors, as shown in the sectional plates, and to which we direct special attention.

Foremost among these distinguishing interior arrangements is the intermediate Nozzle, by which the water is supplied to the steam jet in two annular streams. By this means the momentum of the steam, instead of being checked by contact with a large mass of water, is imparted first to one stream and then to the other, thus making the steam jet more effective than it would otherwise be. Another advantage of the intermediate nozzle is, that the over-flow from the first or upper annular orifice flows down into the second one, so that the water supply is regulated, and adjusts itself to the steam jet.

The chief defect of injectors generally is the difficulty in feeding the boiler with a steady stream of water, on account of the steam jet being only partially condensed, where there is but one water-way. This causes it to expand again after it has left the injecting nozzle, and thus breaks the water jet, interfering materially with the duty of an injector.

This difficulty is entirely obviated in the Injector of our make, by the double water-way before mentioned. The steam jet, being subjected alternately to the action of two streams of water at two distinct points, becomes thoroughly and effectually condensed, and by its imparted force carries the water in a steady, unbroken stream into the boiler.

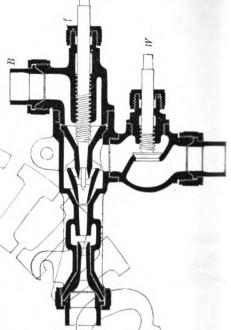
By this arrangement, also, the first stream becomes a motor of the second, and carries it along without using more steam than is required to drive the first. Hence the superior economy of the intermediate nozzle in the use of steam.

These Injectors start as promptly and work as well with steam of a high pressure as with that of a low pressure, and deliver more water with the same consumption of steam than injectors with movable nozzles, or other contrivances, that are constantly getting out of order, besides being more simple and easily manipulated. The intermediate nozzle of these Injectors being fixed and stationary, they are not liable to wear or need repairs.

These Injectors are Non-Lifting and Lifting, and divided into several classes, as here

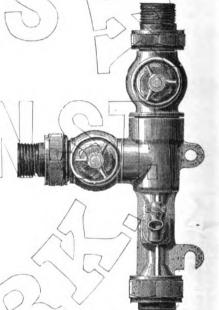
The Non-Lifting Locomotive Injector, which is placed below the water-line, can be used as a heating cock for the tender or water tank, by closing the overflow valve. The ordinary heating cocks are thus done away with, and that expense spared. The water in the tank, by this means, can be heated up to one hundred and twenty degrees, without giving any trouble in working or starting the Injector.

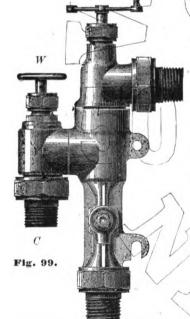
The LIFTING INJECTORS are applied only when water to feed boilers is taken from Rivers, Ponds, Low Reservoirs, Wells, Buckets, etc., where there is no head of water, and will raise water, according to steam pressure, from six to eighteen feet.



CLASS B .- LIFTING, FOR LOCOMOTIVES.

LASS C. Non-Lifting Injectors, FOR STATIONARY BOILERS.





CLASS D.-LITTING INJECTORS FOR PORT

ABLE AND STATIONARY BOILERS.

CAPACITY AND PRICE-LIST OF INJECTORS.

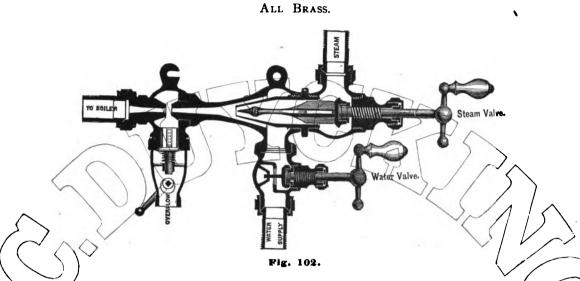
	SIZE OF IN	NJECTO	RS.	No.	2	7 3	4		56	7	8	9	10	12	14	16	18	20
CAPACITY.	MINIMUM DELIVERY PER HOUR, IN GAL- LONS, AT	120 lt 80 50 20		Pressure	90 80 63 39	220[180 141 90	390 320 243 160	\$30 590 395 250	1		1560 1280 910 639	1620	2000 1580	2880 2275 1440	3920 3110 1958	5120 4046 2560	•	8000 6323 3995
Min	imum Inside Diameter	of Pipe:	, in inch	ies	1/2	34	ī	11/4	1 1/4	1 1/2	1,14	2	2	2 1/2	21/2	3	3	31/2
PRICE-LIST.	Price of Non-Lifting I complete, Class C. Price of Lifting Inject plete, Class D	or, in b	st gun i	netal, com-/	Φ21	\$35 42	\$50 60	\$65 70	\$75 85	\$00 100	\$110 120	\$130 140	\$1(x) 180					

TO DETERMINE SIZE OF INJECTOR REQUIRED.

One nominal horse power, per hour, will generally require 71/2 gallons of water per hour. In case of plain cylinder boilers, divide the number of square feet of heating surface by to for the horse power. In case of flue boilers, divide by 12, and with multitubular boilers divide by 15 for the nominal horse power. Care should be taken, in ordering, to state whether the Injectors wanted are NON-LIFTING or LIFTING-for High or Low Pressure.

MACK'S PATENT INJECTORS OR BOILER FEEDERS.

FOR LOCOMOTIVE AND STATIONARY BOILERS.



This is a fixed nozzled Injector, free from all the objections attached to an automatic or other adjustable Injectors. It has a working range with one handle, from 15 lbs. to 175 lbs. steam pressure on a locomotive. It is always reliable, whether worked constantly of once in a year.

When extraordinarily high pressure is required, we attach a valve of our own patent, which will admit of working this Injector at a range of 5 lbs. to 250 lbs. steam pressure.

This Injector is simple in its construction, perfectly reliable, and requires no skill to operate it.

If attached where a head of water can be obtained, it is applied in its simplest form, as any ordinary valve, or cock, on steam and water, are all that is required to regulate it.

Where it is necessary to draw the water, as on Locomotive Engines, we apply a valve, so constructed as to draw the feed-water and discharge it to the boiler almost instantaneously, thereby obviating one of the great difficulties felt in operating boiler-feeders of this class

There is, likewise, no possibility of overheating the instrument and destroying its action, because the water is elevated as soon as the valve is opened, and will continue so until the valve is drawn out to admit steam sufficient to impel it to the boiler.

It requires no manipulation to regulate it, however much the steam may vary, and being operated (on the Locomotive) with only one (steam) valve to start and stop, when required, we feel confident that it must recommend itself to Railroad Engineers, as one of the simplest feeders ever brought before them.

- 1st. It is so simple in its construction, that it presents no difficulties in case of repairs.
- 2d. It is perfectly reliable, and requires no skill to operate it.
- 3d. On Locomotives only one valve is required to start or stop it.
- 4th. It is, also, immaterial whether it is placed inside or outside of the cab, as it will work in any position, or through any ordinary amount of turns necessary.
 - 5th. It is continuous in its action, should the steam be 20 or 150 lbs.
 - 6th. On ordinary boilers it will act when attached to the city main, however much the pressure varies.
 - 7th. It can be attached to propel the feed through a heater, the reby elevating the temperature to the boiling point.

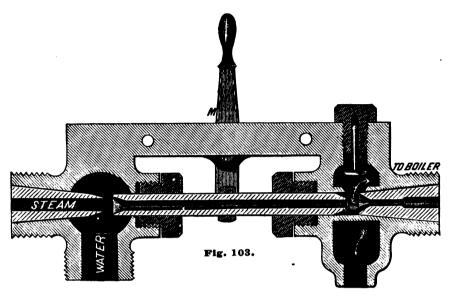
This Injector feeds the boiler constantly, and continually, without ceasing, while the Locomotive is standing or in motion, and the stream of water will not break when the engine is passing over the roughest of roads, and it will also work while hot.

Size	1	2	3	4	5	6	7	8	9	10	1.2
Price\$18 00	20 00	22 00	30 0 0	42 00	55 00.	70 00	85 oo	100 00	115 00	130 00	150 00
Connections	38 in.	1/2 in.	3/4 in.	ι in.	1 1/4 in.	1 1/4 in.	1 ½ in.	1 ½ in.	2 in.	2 in.	2½ in.
Nom'l H. P. at from 30 to 80 lbs., 7	10	20	40	50	75	100	150	200	250	300	375
Lift of Water at Steam 1 of 15 lbs., 9 in.	18 in.	2 ft.	3 ft.	3½ ft.	4 ft.	5 ft.	6 ft.				
Pressure (of 40 " 20 in.	36 in.	4 ft.	6 ft.	8 ft.	12 ft.	18 ft.	25 ft.				

RUE'S LITTLE GIANT INJECTOR.

Made wholly of Brass. Will not rust. Simple in construction, easy of adjustment, reliable. Can be made to work equally used under high or low pressures of steam.

- A. Are for stationary'and other Boilers where the water is supplied from a tank, or pipes, where there is a head or pressure of water.
- B. Are for Locomotive and other Boilers where the water must be lifted. A separate steam pipe is applied to the lifting attachment at P.



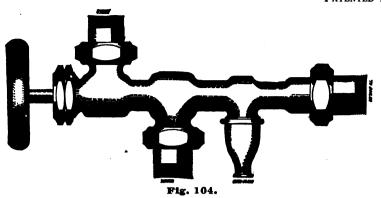
This Injector, made under the Patents of Samuel Rue, Jr., has been thoroughly tested, and has proven its superiority over all others in the following points:

- 1. SIMPLICITY, ease of adjustment and durability; it does not rust or wear.
- 2. It works under almost any pressure of steam or water, and can be worked either to its full or partial capacity; after starting it, an adjustment of the handle M regulates it.
- 3. Reliability. It will work under almost any circumstances without breaking by jarring, roughness of roads, or variation of steam or water supply.
- 4. The great command over it, by means of the adjustable tube, will enable you to feed the boiler at lower pressure, and more economically than to run a pump.
- 5. When there is no steam pressure in the boiler, by closing the overflow, the water will flow through the Injector into the boiler, thus saving an extra feed pipe.
- 6. Being made wholly of brass, with but few movable parts and little wear, it is not likely to get out of order or need repairs, while but few extra fittings are necessary.
- 7. The water being heated to about 210° Fahrenheit, it can be put in at any part of the boiler; even in the side of the firebox, saving much pipe, and not injuring the boiler.
- 8. It can be cleaned without taking apart by merely disconnecting it from the boiler; a wire run through it will remove any obstruction.
- 9. SAVING OF FUEL, ETC. Used as a feeder, with a pressure from a tank, it is simple in form, and the whole of the heat of the steam used to operate it is communicated to the water, and the water is put into the boiler much hotter than any heater will make it. Experience has shown a saving of fuel, oil, packing and repairs, as compared with a pump.
- 10. Where there is no head, and the water must be lifted, a small steam pipe is attached at P, and a steam jet thrown into the overflow pipe, causing a vacuum, by which all hot water or air is drawn out of the Injector, and the water lifted; it therefore goes to work promptly, without waiting to cool, or forcing you to work at it to get the jet to form a vacuum, as in other Injectors.

No o	2	. 3	4	5	6	7	8	9	10	12
Price\$15 00	30 00	45 00	55 00	70 00	85 oo	100 00	120 00	140 00	190-00	240 00
Size of Pipe Connections	1/2	3/4	1	1 1/4	1 1/4	1 1/2	2	2	2	2 1/2
Pressure of Steam 90	90	90	90	90	90	90	90	90	90	90
Gals. of water delivered per hour, 60	120	300	600	900	1200	1620	2040	2480	3000	3600
Nominal horse-power4 to 8	8-20	20-40	40-80	60-120	80-160	140-225	200-275	250-350	300-400	350-500

ECLIPSE INJECTOR. THE

PATENTED MARCH 7, 1876.



MADE WHOLLY OF BRASS. ALL JOINTS GROUND.

PRICE-LIST

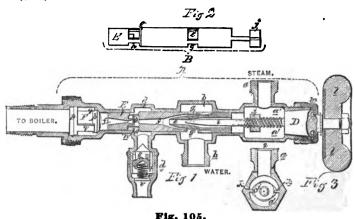
Of the following sizes. If larger sizes are required, they must be specially ordered.

No.	A	I	2	3	4	5	6	7	8	9	10	12
Price	*	\$18 3/8 8	\$22 ½ 20	*	\$50 I 55	11/4	174	1 1/2	2	\$125 2 285	2	21/2
70 lbs. Steam. \\ No. of Gal. per min.		34	2			12			1 -	1	48	66

Purchasers of Injectors, if they desire it, can have the inside working parts in duplicate, thus giving them the advantage of two machines, at the following prices:

No.	A	I	2	3	4	5	. 6	7	8	9	10	12
Price	\$ 5	\$7	\$10	\$12	\$15	\$20	\$23	\$25	\$27	\$ 30	\$ 40	\$50

manner. The Special Lifter at same prices as above.



Each Injector, as usually set up, requires the following

ATTACHMENTS.

which will be furnished at market prices, as below:

No.	I	2	3	4	5 and 6	7	8, 9 & 10	12
Size of Connections.	3∕8 in.	½ in.	¾ in.	I in.	11/4 in.	1 ½ in.	2 in.	2 1/2 in.
(I) Steam Valve, (I) Water Cock, (I) Stop V라ve) 브	\$ 1 00	\$ 1 35	\$ 1 85	\$ 2 60	\$ 3 80	\$ 5 2 5	\$ 7 50	\$13 25

Pipe Connections and Extra Fittings according to position of Injector.

In presenting this new and improved Injector to the public, These Injectors are made entirely of brass, and are finished in the best we beg leave to call attention to a few points of superiority which. we claim, it has over all others.

- 1. Its simplicity, durability, and ease of adjustment; any one acquainted with steam can easily attach and work it.
- 2. It has but three working parts, which can be readily taken out, separated, examined, cleaned, and replaced, without breaking any of the connections.
 - 3. It works under any pressure of steam, from five pounds upward. It is an impossibility to throw it off while working.
- 4. The regulator being once properly set and locked, it will work, without further adjustment, between five and one hundred pounds pressure, it being necessary only to turn on water and steam.
- 5. The water is heated to two hundred and ten degrees Fahrenheit by the use of this Injector; hence no heater is necessary, and can be dispensed with.
- 6. There is no loss of steam when feeding the boiler, as the steam is returned to it again with the hot water. It can be regulated to feed much or little, as may be required.
- 7. It is not necessary to run the engine to pump up; hence there is a saving of wear and tear of machinery, and consequently a saving of fuel.
 - 8. It will lift water as high as any Injector in the market, and will take it warmer.
- 9. When necessary to refill the boiler with cold water after cleaning out, by closing the overflow and removing the working part, the water from tank or supply will flow through the Injector, the opening being the size of the connecting pipe.
- 10. For Locomotives it is particularly adapted, as by simply turning in the regulating valve tight, it then throws the steam into the tender or water tank, heating the water therein, and thus obviating all danger of freezing.

In stating the above points of superiority, we make some strong claims for the Eclipse Injector, and, asking a fair trial, will rely entirely on the merits of the machine as a guarantee of perfect satisfaction.

In every case where not found as represented, they will, if uninjured, be removed, and the payments refunded.

In ordering Injectors, state whether the water has to be lifted, and how high, or if to be taken from a tank or street main, as we make a Special Lister, which will list water much higher than any ordinary Injector. The Special Lister requires no extra attachments, and is furnished at same prices. See Price-List.

TO DETERMINE THE SIZE OF INJECTOR REQUIRED.

One nominal horse power will generally require 71/2 gallons of water per hour.—To determine the nominal horse power: in case of large or plain cylinder boilers, divide the number of square feet of heating surface by 10; for flue boilers, divide by 12; and with multitubular boilers, divide by 15.

KNOWLES PATENT STEAM PUMP.

PRICE-LIST OF REGULAR SIZES.

All these Pumps (except special orders) are made "long connected," thus of viating the great disadvantages of running the Piston Rod from the live steam into cold water, and consequent tearing away of Stuffing Boxes, loosening of Pistons etc. "Close Connected" Pumps only to order.

No.	Steam Cy in inches.	Diam. of Water Cyl.	Lgth. of Stroke	Gallons per Stroke.	Strokes per Minute.	Size of Steam Supply Ply Pipe.	t n e	Size of Suction.	Size of Discharge.	PRICE
I	3	2	(4)	.06	I to 300	1/2	3/4	11/4	- I	\$150 00
2	4	2 1/2	15	.10	I to 300	1/2	3/4 3/4	11/4	- I	200 00
3	5	31/4	7	. 25	1 to/275	3/4	I	2	- 11/2	250 00
4	5 1/2	334	7	. 34	I to 275	34	I	2	- I1/2	275 00
5	7.,	4 1/2	10	.69	I to 250	I	11/4	3	- 21/2	375 00
6	7 1/2	5	10	.85	1 10 250	/I/	114	3	- 21/2	400 00
7	10	0	12	1.46	I to 200	14/4	1/2	4	2-3	475 00
8	12	7	12	1.99	I to 200	2	21/2	15	2- 31/2	550 00
9	14	8	12	2.61	I to 200	2	21/2	5	2- 31/2	600 00
10	16	IO	16	5.43	I to 200	2	21/2	6	2-4	800 00
II	18	12	24	11.75	I to 180	21/2	3	8	- 6	Prices
12	20	14	24	15.99	I to 180	21/2 /	3	10	— 8	according
13	24	18	24	26.43	I to 150	3	4	12	—IO	to work
14	30	22	24	39.49	I to 150	4	5	14	-12	required
-					-	1		1		

Larger sizes or different proportions of Steam and Water Cylinders on hand, or made to order at short notice.

These Pumps will be lined with gun metal when used to pump liquors requiring it



Fig. 106. Nos. 3 and 4.—Showing Hand Power Lever and Lever Detached.

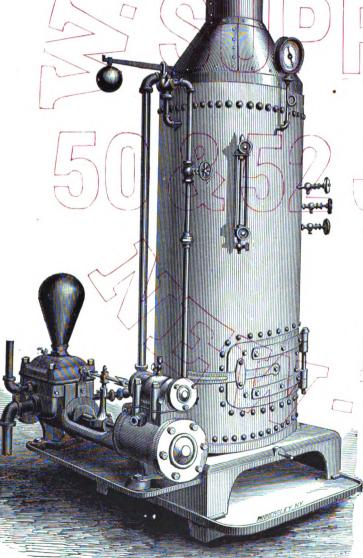


Fig. 107.—No. 8 Pump and Boiler, Complete.

	Í			COM	PLETE,	WITH	BOIL	ER.		
Size of Pump No.	Diameter Steam Cyl. in inches.	Diameter Water Cyl. in mches.	Lgth, of Stroke in Inches.	Gallons per Stroke.	Strokes per Minute.	Size of Steam Sup- ply Pipe.	Size of Steam Ex- haust Pipe.	Size of Suction.	Size of Discharge.	Price, with Boiler and Fittings, Complete.
3 4 5 6 7 8	3 4 5 5½ 7 7½ 10 12	2 2½ 3¼ 3¾ 4½ 5 6 7	4 6 7 7 10 10 12 12	.06 .10 .25 .34 .69 .85 I.46 I.99	I to 300 I to 300 I to 275 I to 275 I to 250 I to 250 I to 200 I to 200	1/2 1/2 3/4 1 1 1 1/4 2	34 34 1 1 14 14 14 2 1/2 2 1/2	2-114 2-114 2-2 2-2 2-3 2-3 -4 -5	2—I 2—I 2—I ½ 2—I ½ 2—2 ½ 2—2 ½ 2—3 2—3 ½	\$425 00 475 00 525 00 550 00 750 00 775 00 950 00 1050 00
Tank Pumps.	5½ 7½ 8	5½ 7½ 8	6 9 12 16	.62 1.72 2.65 5.43	I to 275 I to 275 I to 250 I to 250	34 34 11/4	I 1/4 I 1/4 I 1/2	-3 -4 -5 -6	-2 -3 -5 2-4 or 1-6	600 00 775 00 862 50 1300 00

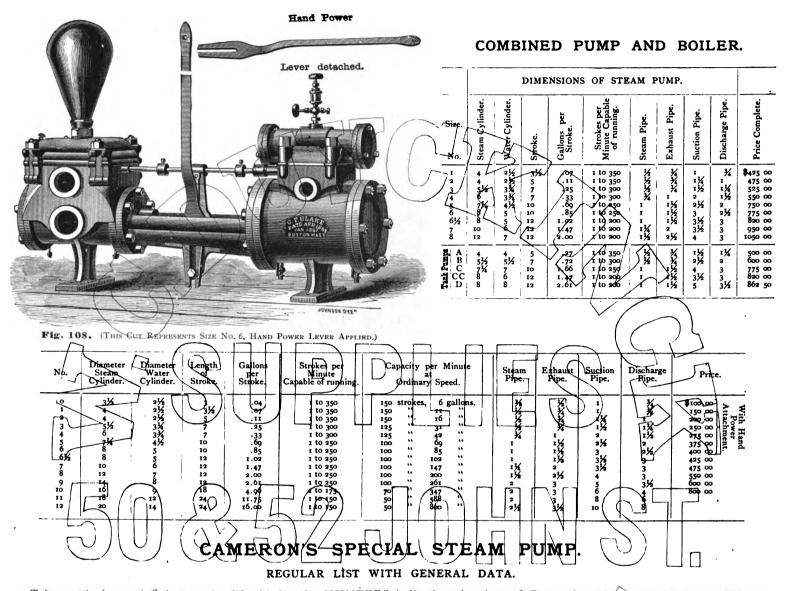
Darger sizes, with upright, or horizontal tubular, locomotive or patent boilers, to order at short potice.

Any desired style of boiler furnished at lowest market price.

The above prices include Pump, Boiler, Boiler Base, Base Plate, Grates, Smoke Bonnet, Steam Gauge, Water Gauge, Gauge Cocks, Blow-off Cocks, Safety Valve, together with the Steam Pipes, Exhaust Pipes, and Feed Pipe, with their necessary valves, unions, etc., complete and ready for operation.

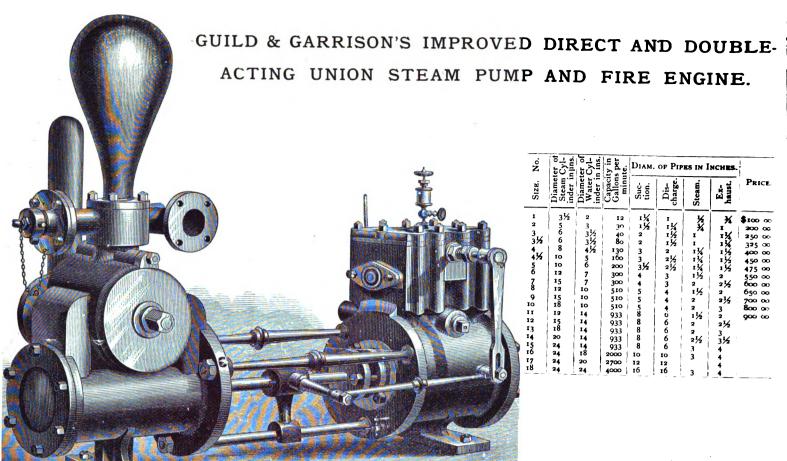
BLAKE'S PATENT STEAM PUMPS.

PUMPS FOR FEEDING BOILERS AND FORCING WATER UNDER HEAVY PRESSURE.

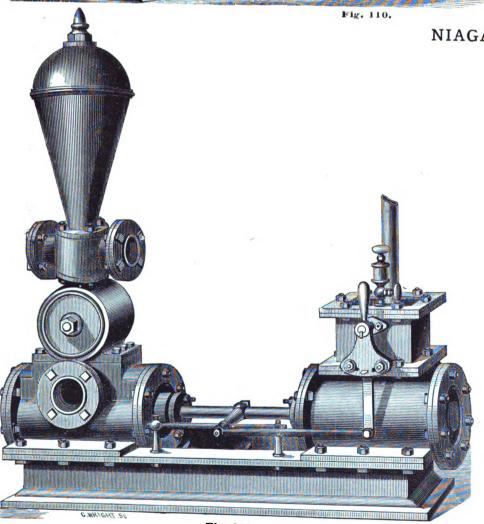


Take particular notice that to simplify this list the NUMBERS indicating the sizes of Pumps have been REARRANGED. This was done to avoid the half sizes which had been introduced. In ordering, be sure to say: Pump, number so and so, NEW LIST.

In comparing this list hofth that of other makers, compare the sizes of the Cylinders and length of Stroke, and not the numbers of the Pumps. ımp Cylinder Stroke of Piston Height Width \$75 100 150 200 275 325 400 425 480 550 700 850 120 150 225 350 425 500 35 45 60 80 110 140 1 1/4 1 1/2 2 2 21/2 1 1/4 1/4 1/4 21/2 6½ 7½ 7½ 9 12 71/2 HOWLAND-COCHEU N. The first four sizes are made to work by hand when so required.



Ŋo.	Cyl-	Cyl.	ry in	DIAM.	OF PIP	es in I	NCHES.	!
SIZE.	Diameter Steam C	Diameter Water C	Capacity in Gallons per minute.	Suc- tion.	Dis- charge.	Steam.	Ex- haust.	PRICE
1 2	31/2	2	12	11/4	1	½ ¾	*	\$100 oc
	1 2	3	30	11/2	11/4		Ι.,	200 00
3 3½	5 6 6 8	3½ 3½ 4½ 5	40 80	2	11/2	I	11/4	250 oc
3/2	i g	3/2		2	11/2	Ι.,	174	325 ⊙∞
74	10	472	130	3 3 3½	2	11/4	11/2	400 00
7/2	10	2		3,,	21/4	11/4	172	450 oo
4 4½ 5 6	12	-	200	3/2	21/2	11/4	13/2	475 00
-	15	7	300	4	3	11/2	2	550 ∞
7 8	12	10	300	4	3 4	2	21/2	600 00
9		10	510	5	4 '	11/2	2	650 ∞
10	15 18	10	510	5	4	2	21/2	700 00
11	12		510	5 1	4	2	3	800 on
12		14	933	8	6	11/2		900 00
13	15 18	14	933	4 5 5 5 8 8 8 8 8	9	2	23/2	
14	20	14	933	8	6	2	31/2	
16	24	14	933	8	6	21/2	31/2	
16	24	14	933		6	3	4	
17	24		2000	10	to	3	4	
18		20	2700	12	12	1	4	
·	24	24	4000	16	16	3 ;	4	



NIAGARA DIRECT-ACTING PUMP.

Size. N	Diam. Steam Cyl. in ir	Diam. Water Cyl. in ir	Stroke Inches	Revolutions.	No. of Gallons Dischar'	PRICE.
o A	3.,	2	3	150	12	\$120 00
A	3⅓	2	6	130	20	140 00
I	4	2	6	130	20	160 00
2	5	21/2	8	120	40	240 00
3	7	2½ 3½	9	110	87	350 00
5	9	5	10	100	170	460 00
5	12	7	12	90	360	575 OO
	34	81/2	14	90 80	549	700 00
7	16	IO	16	7° 65 60	76í	850 00
	18	12	18	65	1144	1025 00
9	20	14	20	60	1600	,
10	22	16	22	55	1994	
11	24	18	24	50	2642	
12	26	20	26	50	3536	

NIAGARA DIRECT-ACTING STEAM WRECKING AND TANK PUMP.

Size. No.	Diam. of Steam Cyl. in ins.	Diam. of Water Cyl. in ins.	Stroke. Inches.	Revolu- tions.	No. of Gallons Dischar'd per min.	PRICE.
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	4 5 7 9	2½ 3½ 5 7	6 8 9 10	125 110 100 90	32 77 153 300	\$200 00 310 00 410 00 525 00

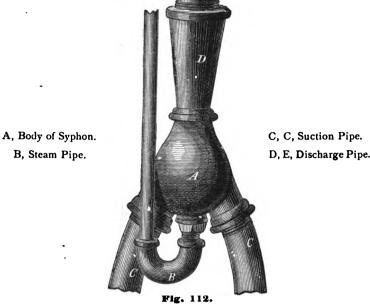
NIAGARA CRANK PUMP AND ENGINE.

SIZE. No.	Diam. of Steam Cyl. in ins.	Diam. of Water Cyl. in ins.	Stroke. Inches.	Revolu- tions.	No. of Gallons Dischar'd per min.	PRICE.
1 2 3 4 5 6	4 5 7 9 12	2 2½ 3½ 5 7 8	4 5 6 7 8	200 180 160 110 100 85	20 40 80 135 250 348	\$225 00 300 00 400 00 550 00 650 00

LANSDELL'S PATENT STEAM SYPHON PUMPS.

DOUBLE SUCTION LIFT AND FORCE PUMPS.

High Pressure Pumps are constructed to work with 30 lbs. and upward, steam pressure. Low Pressure, from 30 lbs. down. Set the pumps, whenever practicable, twelve feet above the surface of the water.

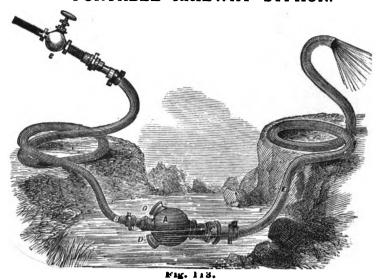


B, Steam Pipe.

OPERATION.—Steam is turned on through the steam pipe B, and rushes across the globular chamber A into D, carrying the air in A and D before it, thereby exhausting the air from A. Water to supply its place rises through the suction pipes C, C, from atmospheric pressure, as in ordinary suction pumps, when the steam jet forces it onward through D, E, with a velocity proportioned to the pressure in the steam boiler.

	Dian	neter of D	ischar	ge.	Capacity in Gals Per Minute.	High P	ressure.	Low Pre	ssure.
D	ouble S	Suction,	34	inch.	30	\$8	00	\$10	00
	**	**	ľ	**	50	10	00	12	50
	"	**	1 1/2	"	120	17	50		oo
	"	"	2	**	200	22	50	25	00
	**	44	21/2	**	320	35	00	-	00
	"	44	3	44	450		00	50	00
	• •	**	4	44	800		00	-	00
	"	44	6	**	1800	150		175	
Si	ngle"S	uction.	11/	44	60	12	ro l		00

PORTABLE RAILWAY SYPHON.



This shows the mode of applying the Steam Syphon to fill a locomotive tender from any body of water within reach near the side of the road. B is the steam hose attached to the locomotive boiler by a steam cock. A, the Steam Syphon. C, the steam cock to be tapped into the boiler. D D, the suction orifices. E, the discharge hose.

Steam is let on through the hose B, and water is forced through the discharge hose E into the tender. No. I will supply the ordinary quantity of water required by a tender in 10 to 12 minutes. No. 2 in 6 to 8 minutes.

No. 1,	25 feet	each o	f Steam	and	Discharge	Hose	\$110 oc
	30	**	"	"	"	**	125 00
	35	"	**	"	44	**	135 00
	40	"	"	"	**	••	145 00
	45	**	"	• •	66	"	155 00
	50	**	44	"	"	44	165 00
No. 2,	25	**	"	"	44	"	145 00
	30	"	. ••	44	"	"	155 00
	40	"	**	44	44	"	180 00
	50	"	**	"	"	"	200 00

Every Locomotive provided with this appliance can be used as a fireengine, throwing water from the tender or any adjacent water.

AQUOMETER STEAM PUMP,

Characterized by an absence therein of purely mechanical elements. It consists, as shown in the illustrations, of two working-chambers, combined with an interposed pressurechamber. Its only moving parts are the customary check-valves, arranged to prevent a return of the water entering the workingchambers and discharge-pipe, and a very simple and ingenious steam-valve.

There are no rubbing surfaces to produce friction or require lubrication; no parts requiring delicate adjustment or special attention, and none which are subjected to great strain or wear.

No 3	4	5	7	9
Steam Supply Pipe 3/8	1/2	¾ or ½	I to 🔏	11/4
Suction Pipe 2	21/2	31/2	4	6
Discharge Pipe1½	2	21/2	3	5 1/2
Max. discharge per min., gals 60	100	200	400	1000
Price \$125	170	225	375	750

25

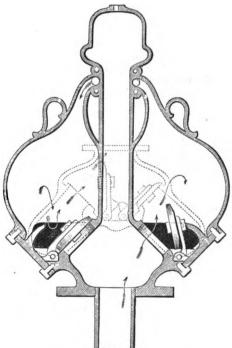


Fig. 115. INTERIOR.



ROTARY FORCE PUMPS.

Fig. 116.

The illustrations present sectional views of this newly invented Rotary Pump, combining many novel and important features, by which every good point of the Piston Pump is obtained, without any of its objectionable ones, together with the economy of cost, space, power, and capacity incident to the Rotary.

An examination of the drawing will demonstrate that it is absolutely positive as a suction and force-pump—as much so as the best Piston Pump.

The entire capacity of the cylinder is utilized, both compartments, outside and inside the eccentric ring, being filled and emptied at each revolution, whether the speed be fast or show.

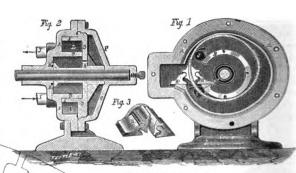


Fig. 117.

Fig. 119 .- Hand Pump.

No.	DIAMETER OF PIPES.	Size or	PULLERYS.	Revolutions	Gallons dischard each	Capacity at full	Prici	E.
	Suction. Discharge.	Diameter	Face.	Ordinary Work.	revolution.	speed por minute.	Iron.	Bronze.
1 2 2½ 3 4 6 8	1 inch. 2½ ". 2½ ". 2½ ". 2½ ". 2½ ". 2½ ". 2½ ". 2½ ". 3½ ". 4½ ". 8 ".	10 inch. 14 " 16 " 18 " 20 " 26 "	2½ inch. 4½ " 5 " 6½ " 8½ " 10½ "	200 to 300 150 to 250 125 to 225 100 to 200 100 to 175 100 to 150 75 to 110	. 114 . 385 . 832 1. 32 2. 22 5. 65	34 Gallons. 96 187 264 388 847 1340	\$40 00 75 00 100 00 105 00 105 00 105 00 105 00 105 00	\$75 00 125 00 160 00 200 00 300 00

Sizes 1, 2, 21/4, and 3, are fitted with tight and loose pulleys. Any desired size of pulley furnished in place of those above mentioned. The proper speed of a Pump depends somewhat upon circumstances, such as neight of suction, etc. The figures given above are for the ultimate rate of speed under ordinary circumstances. For Fire Pumps, the speed should be increased on No. 2 to 350, No. 3/2 250, No. 4 to 200.

the difference in cost of metal will be added in all cases.

THE ABOVE PUME IS PARTICULARLY DAPTED FOR USE IN PAPER AND OTHER MANUFACTORIES, SUGAR REFINERIES, DISTILLERIES, RAILEGAD STATIONS, OIL REFINERIES, STEAMBOATS, ETC. ALL PUME ARE WARRANTED TO GIVE ENTIRE SATISFACTION.

The prices given are for iron. If ordered to be made of other material,

BOATS, ETC. ALL Pumbs ANE WARRANTED TO GIVE ENTIRE SATISFACTION.

This Pump has many superior and important advantages, not possessed by any hitherto in use. Its construction is exceedingly simple, compact, and strong. It has no angles, Cams, or other internal machinery to get out of order or consume power. It can be run equally well either way, and will not get choked from any cause and is self-compensating as to wear. The capacity per revolution, of any given size, is much greater than that of any other make, of like external dimensions.

	\sim	- 1	, L		ſΙτ	$z_{\rm IL}$	· U C	lVT	, 1	U	VII . \	\ \ \ \ \ \ \ \	
Fig. 3.		98 g	<u>/</u> 	in in of	i of in.	Horiz	CONTAL	VER	TYCAL.	PRIMEX	ders.		*
T	No. of Pump.	Size Discha Pipe in	Capac Per min Gals	Damete Pulley i	Face Pulley i	Iron.	Brass.	Iron.	Brass.		Brass.		↓ E
ı	1½ 1¼ 2 2½	1½ 1¾ 2 2½	100 250 350	5 5 7	5 6	\$35 50 70 80	\$65 100 125 150	\$30 40 60 70	\$55 90 110 135	\$10 10 15 15	\$15 20 25 25		-11
	3 3½ 4	3 3½ 4	500 700 900 1200	7 7 8	6 7½ 10	95 110 130	175 230 275	75 95 110	150 200 240	20 25 25 30	35 40 55	0 0	
	5 6 8 10	5 6 8 10	1800 2500 4000 6000	10 12 15 20	10 12 12 12	165 200 310 395	350 410	140 170 265 330	315 360	40 65 75	70 85		
	12 15 22	12 15 22	9000 14000 35000	30 48	16	500 710 1500		420 600 1200		140 175		- MOTHON - M	JEICH

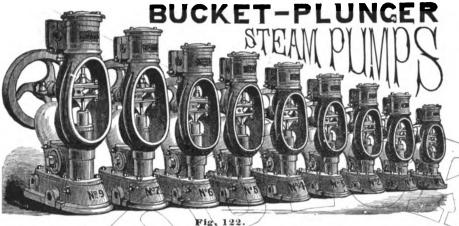
PENTPIFICAL

Pig. 120. THE VERTICAL PUMP.

Fig. 121. THE HORIZONTAL PUMP.



HAND BOILER FEED PUMP, on base.



				/		1	1 7.		/						
No. Designating Sizes.	Diameter of Steam Cylinder in inches.	Diameter of Water Plunger in inches.	Revolutions per minute, varying with kind of work and pressure.	Displacement in Gal- lons per Revolution	Boilers in Horse	Power they will sup-	Length of Floor Space Required, in feet and inches.	Height in feet and inches required to set Pump.	Width of Space in feet and inches required for Pump.	Weight of Pump in Pounds.	Size of Steam Pipe.	Size of Exhaust Pipe.	Size of Suction Pipe.	Size of Discharge Pipe.	PRICE.
0	4	21/4	50 to 200	.04	10	to 40	1- 3	2- 3	I— 4	175	3/8	1/2	I	3/4	\$90 00
1	5	23/4	50 to 200	07	15	to 60	1- 6	2- 7	1- 5	275		3/4	11/4	I	125 00
2	534	3 1/2	40 to 175			10 80	1-10	2-10	1+ 71/2	350	1/2	34	11/2	11/4	175 00
3	7	434	40 to 175	7.18	25/	to roo	2- 1	3- 1	1-10	550	34	I	2	1 1/2	225 00
4	8	514	30 to 150	38	50	to 150	2- 5	3-11	2-3	900	I	14	3	2	275 00
5	10	61/2	30 to 150	.54	50	to 200	2-10	4- 2	2- 8	1200	I	11/4	31/2	21/2	350 00
6	10	7	25 to 125		75	to 300	2-10	5- 2	2-+ 8	1600	11/4	1/2	4	21/2	425 00
7	12	8	25 to 125	1/30		to 400	3- 6	5- 6	3	1900	2	21/2	5	31/2	500 00
9	14	10	25 to 125			to 500	4-6	5 8	3-4	2850	21/2	3	6	5	650 00
			6	5		1	/	-	1,		_	11		-	

In case of fire or other emergency, the speed may be considerably increased beyond figures stated above.

PRESSURE PUMP,
FOR TESTING
BOILERS.

Fig. 124 represents a Pump for generating cold water pressure up to six hundred pounds to the square inch, if sufficient leverage should be applied. This is not calculated for a suction and lift pump, as the piston is too small, but should be placed where the water is about on a level with the Pump or only a short distance below it. For testing the condition of boilers, pipes, or vessels of any kind, this will be found very useful and thoroughly practical. We make two sizes.



Boiler Pumps, all sizes, from 1½ to 3 inches, constantly on hand. Measurement taken from diameter of plunger. Valves of these pumps are detached from the body, and are constructed of the best steam metal.

A Fump constructed as above enables the user to repair it at small cost. Valves constantly on hand,

11/4	inch P	lunge	£.			1)	 . ,	.(\$12	de
11/2	**	~			 				 					1	15	00
2	**	-							 						20	00
21/2	"	44													25	00
3	"	**							 						35	00

WITH TWO PULLEYS, FOR HAND OR POWER.



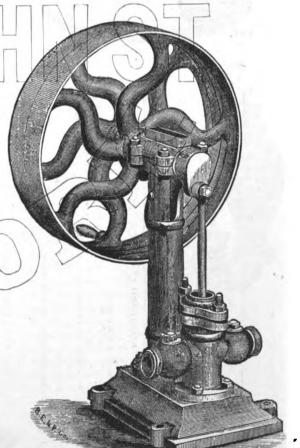


Fig. 123.

\$12 00

11/4

16 00

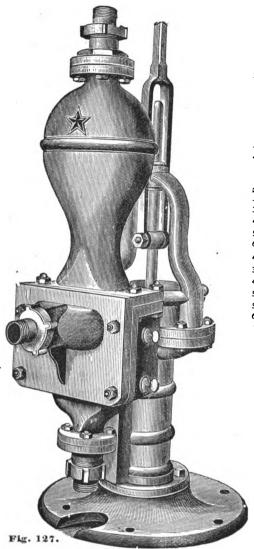
Size of Bore, inch,

On Base, Figure . .)

On Plank.....

For Size Pipe, "





STAR DOUBLE ACT-ING RAILROAD FORCE PUMP.

FOR MACHINE POWER.

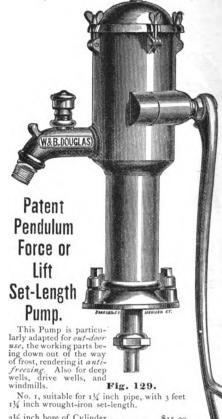
(Fig. 127.)

	(* '8' / . /														
Bore, inch.	Stroke, inch.	Suction and Distribution	Revolutions per minute.	Gallons.	Hand.	Power.									
3	8	11/2	50	26	\$65 00	\$65 oc									
4	8	2	50	47	75 ∞	75 ∞									
5	8	21/2	50	72	90 00	90 00									
6	8	3	50	104	110 00	110 00									
4	10	2	50	59		95 oo									
3	12	11/2	50	35	j	70 00									
4	12	2	50	70	1	101 00									
5	12	21/2	50	108		110 00									
5	15	21/2	50	130		135 00									
6	14	3	50	152	1	175 00									



LIFT AND FORCE PUMPS.

ź ::	•••		nt	27
٠٠			Anti-Freezing	50
••	•••	**	**	30
, ··	Marine	Pump.	•••••	27



2	inch	bore	of	Cylinder		á	à							\$15	00
4					,									15	25
	**													15	50
4		**		**				į.	į.	i	į.		į,	16	00

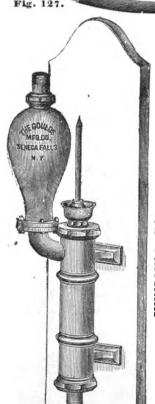


Fig. 130.

WINDMILL FORCE PUMPS.	ich bore, for 1 inch Pipes			"with Air Chamber for 1 inch Pipe			
Σ Σ		:	:	Pip	:	3	
5	:	:	:	I inch	7.1	: 7:	Acres 4
רר		:	:	r for	:	:	
	h Pipes	:	 	. Chambe	:	:	Landa mine attended asher mine and
\$	ı inc	7	" χ:	h Air	:		1
	for			¥.	:	:	. 5
	ñ.	: :	:	:	=		,
	ch be	: :	:	=	:	:	9

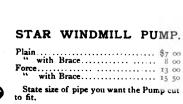
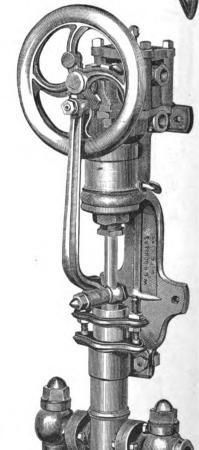


Fig. 131.



DONKEY STEAM PUMP.

With Steam Cylinder, 23/4 inch, and Pump 11/2 inch bore, \$70 00

REVOLVING TOP CISTERN PUMP.

WITH BOLT FASTENINGS, CYLINDER BORED AND POLISHED.



No.	ο,	2 in.	calibre,	suitable	e for	ιin	. pipe,	5¾	in. stroke,	\$ 3	50
**	ı.	21/2	••	••		1	***	6	**	4	00
**	2.	216	**	**	••	11/4	**	6	**	- 7	50
**	2.	23/	**			11/2		6	**	- 3	00
••	4.	7,4	••	**	**	112		6	**	ž	50
••	7	31/	44	44		11%	••	6		6	50
••	ξ,	312	**	**	٠.	2/2	**	Ř	**	Ř	90
	Ξ,	3/2	**	**	• •	-		ĕ	**		

ROUSE'S PATENT MALLEABLE IRON FILTER POINT.



Fig. 134.

							Perform Tin Cov		Perforated Brass Covering.
11/	inch.	with	48	- ¾	inch holes,	, each	\$4 \$4	00	\$ 4 50
11/2	**	**	52	₹8	**		5	00	7 00
,/*			ŏ	1	**	**	8	00	12 00
21/2			60	11/8			12	00	16 00
-/*	44		76	1:1		4.	18	၀၁	22 00

The holes are covered by a brass wire gauze, while a perforated sleeve secured around it protects it while being driven down. We make them with gauze of different meshes, according to soil.

PATENT IMPROVED CLAY AND SAND AUGERS.

FOR BORING WELLS.

CLAY	Augers,	216	inches.	to coup	le on	11/4	inch	pipe.	\$6	ou
02,	,	3			**	11/4		••	6	75
	44	4	**	**		11/4		••	10	50
**	**	6	**	**	**	11/2	to 2		20	
SAND	AUGERS.	21/2	inches,	to coup	le on	11/4	inch	pipe	7	50
SAND	Augers,	21/2	inches,	to coup	le on	11/4	inch	pipe	7	50 45
SAND	Augers,	2½ 3	inches,	to coup	le on	11/4	inch to 2	:	7 8 13	45

We make also a Sand and Clay Auger combined, which we list at same size and price as Sand Augers.

MALLEABLE IRON DRIVING CAPS.

For receiving blows from wood maul, or block, when struck with iron sledge, for driving wells. Entirely new-our own design and pattern.

Fitted for	standard	l size tul	oing, 11/2	inch		\$0	72
	**	**	136	"	 .		90
**	44		2,-	"		1	55
Steel Driv	ing Cap	or Hea	d, for 134	inch	pipe, each.	3	00

IMPROVED PITCHER SPOUT CISTERN PUMP.

WITH REVOLVING BRAKE, BOLT FASTENINGS AND CUT-OFF BASE.

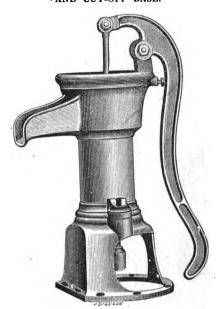


Fig. 135.

										3	Ēα	ch.
Nο.	Ι,	21/2	in.	calibre,	suitable	e for	pipe	11/4 i	n. cali	bre	84	25
••	2.	2			**	**	- 11	11/4	**			
"	-,	3₩		**	**			112				
**	31	3/3		44	**	**		.0	**			
**	ž,	4%		**	••	••	**	i% o	r 11/2 i	in, cal	é	.25

Stroke, four inches each size.

WROUGHT IRON FILTER POINT.

WITH BRASS JACKET.



Fig. 136. We sell several thousand of this style of Point every year. Under the Brass Jacket we place brass wire cloth, and this can be varied in fineness to meet the character of the soil where Point is to be driven.

1¼ inch Point, complete, each......\$4 50 | 1½ inch Point, complete, each......\$7 00 2 inch Point, complete, each......\$12 00

WORKING CYLINDERS FOR DUG OR DRILLED WELLS, WITH PISTONS AND STUBS FOR RODS, COMPLETE.

		Por or inside	Outside diamet'r	Length of		PRICES.	
	STYLE.	diameter of Cylinder.	of Cylinder and Heads.	Bore of Cylinder.	Iron.	Brass Cyl- inder and Iron Caps.	All Brass.
	Fig. 137,	2 inch.	4¾ inch,	7 inch,	\$2 50	\$5 00	\$6 oo
	6, 37,	21/4 "		7 "	3 00	6 ∞	700
	**		51/2 ::	81/4 "	3 50	7 00	8 00
	**	21/2 "		814 "	3 75	800	900
	**	3 "	6½ " 6½ " 7¼ " 7½ " 8¾ "	934 "	4 00	900	10 00
	**	31/4 "	63% "	10 "	4 25	10 00	11 50
	**	3½ " 3½ "	734 "	II "	4 50	12 00	14 00
	**	4 "	7% "	12 "	6 50	15 00	18 ∞
		43/2 "	83% "	12 "	7 ∞	1800	21 00
	Fig. 138,	. 2 "	31/4 "	7	2 50	5 ∞	6 00
	"	2½ " 2½ " 2¾ "	318	7 8½ 8½ 9½	3 00	6 00	7 00
_		21/2 "	378	81/2	3 50	7 00	8 00
			318	874	3 75	8 00	9 00
n		1 3	418	9/2	4 00	10 00	11 50
1.0	**	3½ " 3½ "	4% 4% 5½ 64	10	4 25	12 00	14 00
	**	3/2	4/3	11	4 50 6 50	15 00	18 00
	**	4	572	12	- 3-	18 00	21 00
		₹ ³ / ₂ "."	0.18 "	12 "	700		40 00
	F:			12	1	33 00 8 00	9 00
	Fig. 139,*	173	2 "	16 "		9 00	10 00
		1½ " 1¾ " 1½ "	034 "	16 "	5 50	10 00	11 00
	**	2 "	236 " 236 "	16 "	600	11 00	12 50
	44	21/ "	. II	16 "	6 50	11 75	13 50
	44	- 22 ··	- II "	16 "	7 00	12 50	14 00
The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s	. "	2 1/4 " 2 1/4 " 2 1/4 "	33. "	16 "	7 50	13 75	16 00
	**	3 "	312 "	16 "	800	15 00	17 00
1000	**	3 3 ½ 3 ½ 3 ½	32 "	16 "	8 25	15 75	17 25
	**	33% "	4 "	16 "	8 50	16 50	21 00
	44	33/2 "	736 "	16 "	900	17 25	23 00
	**	4 "	43% "	z6 "	9 50	18 00	26 00
	Fig. 140,*	21/4 "	318 "	, 16 "	6 50	11 75	13 50
		23/4 "	3% "	16 "	7 50	13 75	16 ∞
	**	3X "	432 "	16 "	8 5°	IS 75	17 25
	**	33% "	5 "	16 "	9 25	17 25	23 00

The several figures, 137, 138, 139, and 140, show our lower working cylinders for Dug or DRILLED WELLS, which are arranged for connecting iron pipe above and below, excepting fig. 140, which has a strainer to be used only as a submerged Pump. They are adapted to be used with any of our ordinary Pump standards and brakes at top, or without standard and and simply iron pipe running to the top, in some cases of power use, by windmill, etc., where the standard may be dispensed with. By the table the greatest outside diameter is given, showing the size of hole they will go into in the ground.

Those marked thus * have long metal piston and brass bale, either with strainer or without.

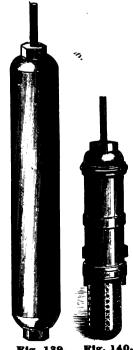
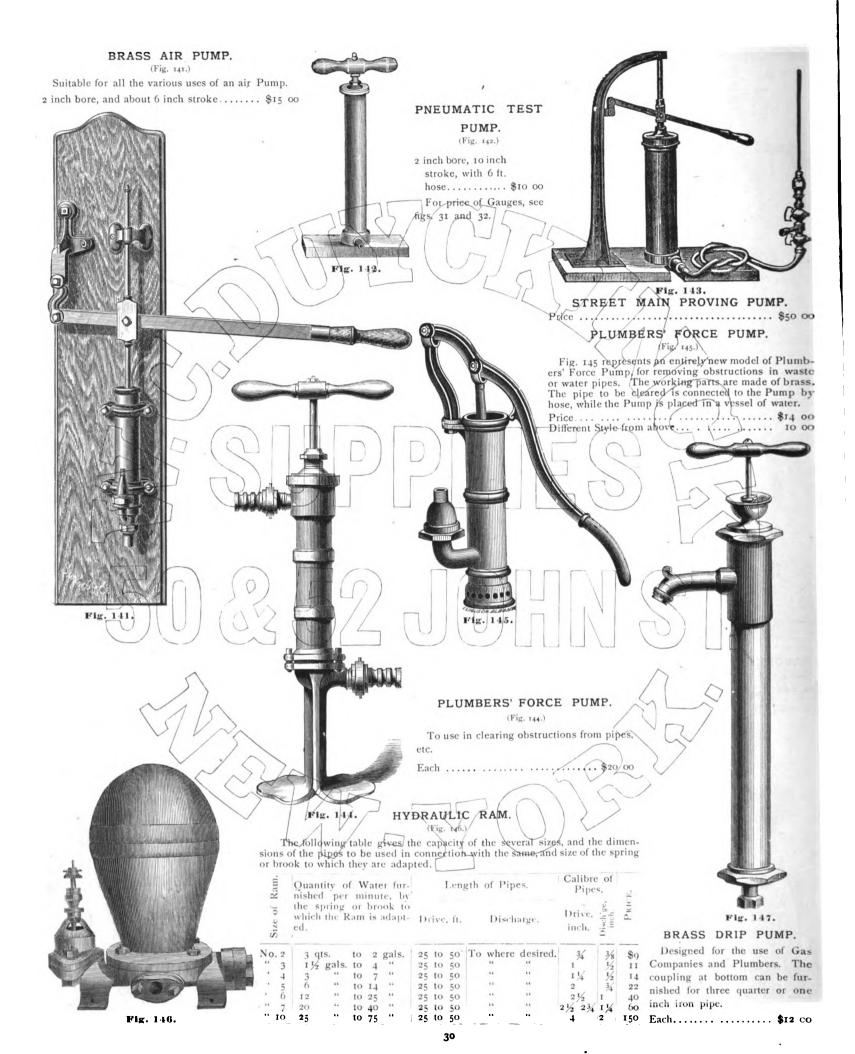


Fig. 139. Fig. 140.



PATENT RAILROAD TANK VALVE,

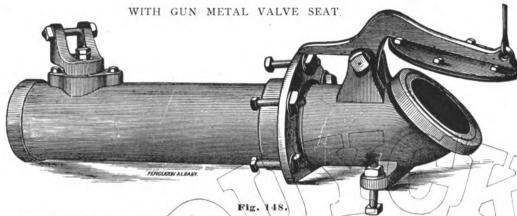


Fig. 148 represents our newly patented Railroad Tank Valve, which is superior to all others for the following reasons, viz.: 1st. The Seat is of gun metal, which surmounts the difficulty with other valves, caused by rusting away of the iron seats, producing a leakage which can not be prevented. 2d. The Valve is faced with leather where it comes in contact with the Seat which will not only make a tight joint, but last for an indefinite period. 3d. The Swivel Hinge, to which the sheet iron Delivery Spout is attached, has a Universal Joint, so that the spout may be swung upward, or from one side to the other, as occasion may require. 4th. Where the Spout is not used, jubber or leather hose may be attached to the end, for the delivery of the water. These Valves are being generally adopted for all new railroad water stations, and are rapidly superseding the old-fashioned and improvised tank valves now in use by the most prominent railroad corporations in the country.

6 inches Calibre, length 42 inches, distance from Tank flange to outer end, 26 inches, each...... \$30 00

POAGE'S WATER COLUMN.

We claim the following advantages

1st. It is operated entirely from the top of the tender, without inconremienge or delay.

2d. It returns to its position between the tracks, automatically, with-

on assistance.

3d. It is anti-freezing, the water being drained down below the freezing point, automatically, after being used.

4th. The valve is balanced to the extent necessary to make it oper-

ate to the best advantage.

5th. When in use no part of it projects over the opposite track, endangering passing trains

oth. Each part performs its work well, is very simple, and not liable

to get out of order.

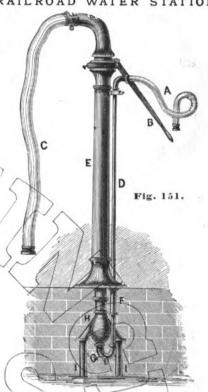
The cut represents the Valve operated by a hand wheel, which secures a gradual closing of the valve, and prevents the bursting of the conducting pipe when the water comes through a long pipe, or at a high pres-

we also make the machine with a lever, which opens and closes the Valve instantly—to be used when the pressure in the conducting pipe is

We offer this machine to railroad men, confident that its excellence will be appreciated by them. We will furnish these machines to order, and on short notice.

Complete, 8 inch Pipe..... \$500 00





Dispenses with tanks, tank houses, stationary power, and attendance. Can not freeze in any climate, under any circumstances. Costs less than one half the price of a frost-proof tank.

The engineer in charge of the locomotive attaches the Hose A to a steam valve in the boiler. Steam passes through the Pipe D and Slip Joint F into the Globe H, producing a vacuum; the water is then lifted through the Pipes I₁I, and forced through the Column E and hose C into the tender, filling any ordinary tender in about three minutes. When steam is showed all the water in the pipe returns into the shut off, all the water in the pipe returns into the well, and any condensed steam passes off through the drip valve G, leaving nothing to freeze. The handle B serves to turn the discharge pipe and hose in any direction. The water delivered into the tender is warm, thus utilizing the steam used. The discharge tubes, represented above made of hose, can be made of iron if preferred.

Each, complete, with not more than 15 feet Steam Hose, 15 feet Discharge Hose, and 18 feet of Pipe below the base of the column.



This Patent Tank Valve has the following advantages, viz. : 1st. It is raised and lowered same as the common tank valve,

2d. It is moved around laterally, the same as the stand pipe and water crane.

3d. It is lengthened or shortened by drawing out or shoving in the Telescopic Pipe.

4th. The joint where it is lowered, raised, or moved around laterally, is a perfect universal ornit, and is made water-tight by closing on a rubber ring, thereby preventing all waste of water of dormation of its around the table.

and formation of ice around the tank.

5th. It may be placed on a tank between two tracks, and serve both tracks.

6th. Where the tank is too near the track to place a common tank valve, it (our Patent Tank Valve) can be placed on the side of the tank, at a sufficient distance from the track, and can be operated in any direction.

This Tank Valve with Telescopic Pipe will reach the hole in a tender at a variation in its position on track of eleven to twelve feet, thereby saving the train from being moved backward

or forward to get exactly opposite the Tank Spout, as when the common tank valve is used.

We manufacture the Patent Tank Valve with and without Telescopic Joint, but recommend Telescopic Joint Tank Valve as superior.

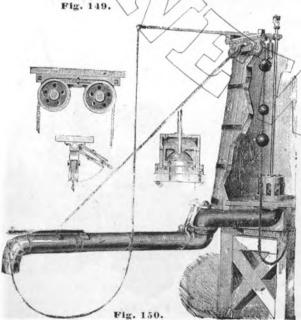
A simple and perfect machine in all its parts and uses, superseding and more than filling the place of the expensive stand pipe and water crane, at a cost very slightly in advance of the com-

mon tank valve We have a large number of these tank valves in use, and they are all giving perfect satis-

faction. In order to have these Tank Valves perfect, we sell them in all cases complete, with Sheet

Iron Conductor, Weight, Chain, Pulley, Lever, etc.

Price, for Valve, Spout, Weight, Chain, Pulley, Lever, etc., complete: 80 30 78 10 \$71 50 69 30

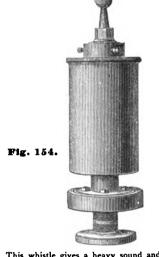


FOR RAILROAD WATER STATIONS.

PLANTATION and FARM BELLS.

FERGUSON.50. Fig. 152.

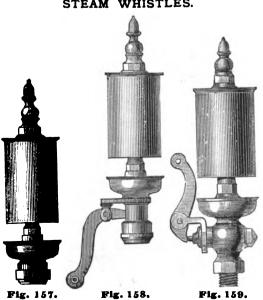
IRON STEAM WHISTLES.



This whistle gives a heavy sound and can be heard at very great distances. Fig. 154.

4 5 6 Diameter of Bell..... Steam Whistle, Single Bell.. \$20 25 30 40 50 60 80 Steam Gong or Double Bell.. 36 45 54 72 90 108 144

STEAM WHISTLES.



COMPLETE WITH HANGINGS.

As shown in Fig. 152.

151/2 ir	iches di	ameter,	weigl	nt 62	lbs\$6 oo	,
161/2	**		**	77	, " 8 co	,
181/2	**		**	102		,
21	••	**	**	132	. "	,
24	**	**	**	180		,

WITH HANGINGS AND FRAME COMPLETE.

Fig. 153.

24	inches	diameter,	weigl	nt accó	lbs.											٠.			\$:	25	o
28	**	**	••	375	**	٠.					 				 				4	ţ0	o
30		**		422	**							 			 			٠.		50	œ
33	**	**	**	740																	
40	**	**	**	1100	••										 				13	30	o
Τo	lling at	tachments	for 2																		
	**		33	inch	bells	, e	хţ	ra	١			 			 					5	α
				,																	

Whistles and Gongs especially adapted for fire alarms or fog signals, and for large manufacturing establishments to designate the hours of labor.

FITTS' CELEBRATED STEAM GONG.

Fig. 155.

These Bells are so adjusted and tuned as to produce a musical fifth chord, or with the addition of a third bell a fifth and eighth. This entirely obviates the harsh sound of the whistle, and by following the law of atmospheric harmonic vibration, while their tones are soft and pleasant near by, their power of sound is immensely increased. The different sizes are toned to different notes of the musical scale, and by various combination may be varied in pitch to a limited extent. They have been heard thirty miles, thus showing their vast powers of sound. It can be applied to any common boiler, as the quantity of steam required to sound it is trifling.

DIRECTIONS FOR CONNECTING TO THE BOILER.

- 1. Use a 3 inch pipe if the steam be less than 75 lbs. to the inch, if above that, 21/2 inch pipe will answer.
- 2. Connect to the main pipe of the boiler, or to the boiler itself, in such a way that the water caused by the condensing of steam will run back in the boiler.
- 3. Carry your pipe to the top of the buildings, place the Gong upon it, with the valve as near to the Gong in all cases as practicable.

	5	inch,	including	valve, nts	1%	inch pipe	\$ 00	900
	6	**	**	**	11/4	**	6	5 00
	8	**	**	**	2	٠.,	80	00
7	10	**	**	**	2	**		5 00
n tite	12	**	**	**	21/2	**		00
Fig. 155.	12	**	3 tones ha	rmonized,	fits	3 "	160	00

IMPROVED STEEL AMALGAM BELLS. FOR SCHOOL-HOUSES, ACADEMIES FACTORIES, SHOPS, Etc.



Fig. 153.

WHISTLE CHIMES.



Fig. 156.

Chime of 3	Whistles	; 3, 4, and	l 5 inch		· • · · · · ·	\$05 ∞
						95 00
These C	himes are	carefully	tuned, so	as to	form a	harmonic

chord. Other sizes to order.

STEAM WHISTLES.

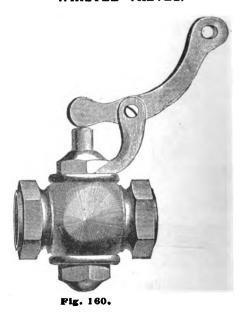
Diameter of Bell.	Screw for Iron Pipe.	Fig. 157.	PRICE. Fig. 158.	Fig. 159.
1	*	\$3 ∞		\$4 50
11/2	₹	4 00	\$5 ∞	. 600
2	1/2	5 00	6 ∞	7 ∞
21/2	*	6 50	7 50	900
3	1	8 00	900	10 50
31/2	11/4	10 50	12 00	13 50
4	134	12 00	14 00	16 00
5	11/2	16 ∞	18 00	20 00
6	2	22 00	25 00	28 00
8	21/2	57 0 0	6 0 00	
10	21/2	120 00		i
12	3	260 oo		

WHISTLE VALVES.

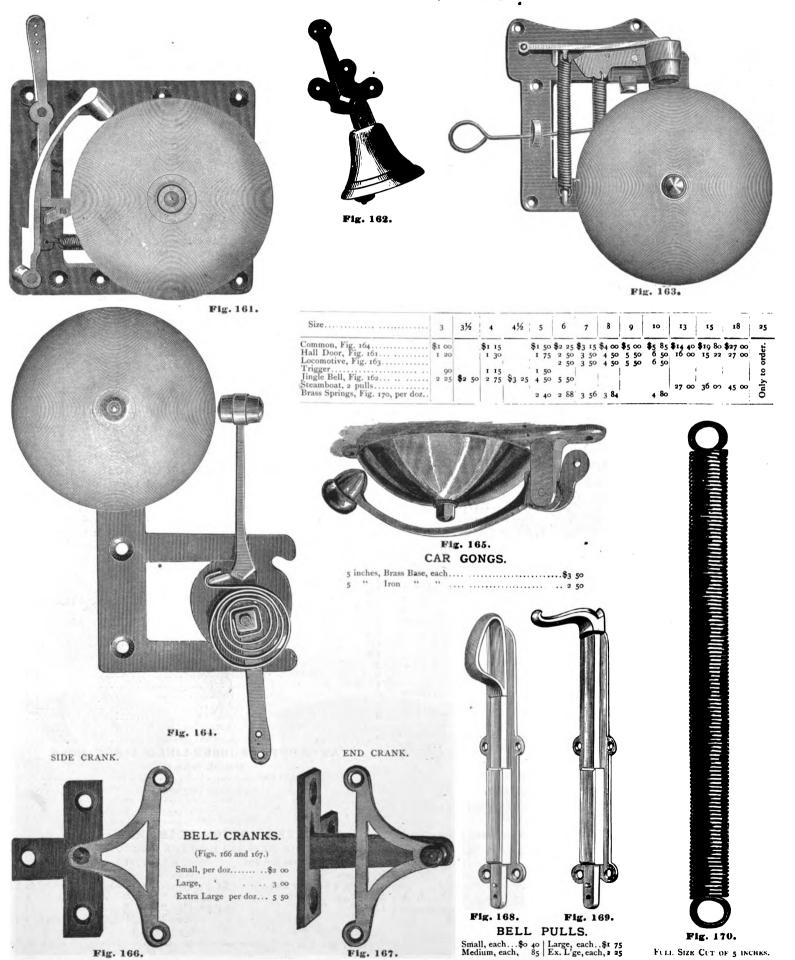
Fig. 160.

Size ½						
Price, each \$2 o	0 2 75	3 75	4 50	5 50 9	∞ 15 ∞	24 00
Price, each	o 4 50	5 50	7 00	8 50 14	00 23 00	34 00

WHISTLE VALVES.



GONG BELLS, ETC.



HOSE.

RUBBER HOSE.

Size, inches ½ ¾ ½ ½ 1 1½ 1½ 1¾ 2 2 Ply \$0 17 25 29 33 42 50 58 66 3 Ply 20 30 35 40 50 60 70 80 4 Ply 25 37 43 50 62 75 87 1 10 1	2½ 2½ 2¾ 3 4 5 6 7 8 9 IO 75 83 92 I 00 I 33 I 66 2 00 2 33 2 66 3 00 3 53 90 I 00 I 10 I 20 I2 I 25 I 37 I 50
STEAM HOSE. Size, in. 1/2 1/4 1 1/4 11/4 12 21/2 21/4 3 4 50 62 37 44 50 63 75 87 99 1 25 1 38 1 50 2 00 2 10 3 60 3 Ply, 30 45 53 60 75 90 1 05 1 20 1 50 1 80 4 Ply, 38 55 65 75 93 1 13 1 31 1 50 1 68 2 25 Five and Six Ply Hose made at an advance of twenty-five and fifty per cent respectively, on Four Ply prices. Extra Steam Hose served with markin before vulcanization, ten per cent advance of price-list. PATENT CARBOLIZED HOSE	4 4 50 8 " " 16 50 19 50 19 50 10 " " 19 50 10 50 10 10 50 10 10 50 10 10 10 10 10 10 10 10 10 10 10 10 10
Size, in 1/2 1/4 1/2 11/4 2 2 Ply \$0 22 32 37 42 53 63 73 83 3 Ply 25 38 44 50 63 75 88 1 00 4 Ply 32 47 54 63 78 94 1 09 1 25 Patent Carbolized Fire Hose, 21/2 inch, four ply, with "end strengthen ed" five ply and capped ends, for steam fire engines, per foot \$1 25 Patent Carbolized Fire Hose, 21/2 inch, three ply, with "end strengthened" four ply and capped ends, for hand engines, per foot 1 10	RUBBER TUBING.
Diam. 2½ inch, Donble Copper or Tinned Copper Rivet Steam Fre Engine Hose, extra heavy 2 inch, Double Copper or Tinned Copper Rivet Hand Engine Hose, extra heavy 2 inch, Single Copper or Tinned Copper Rivet Steamship Hose, extra heavy 1½ inch, Single Copper or Tinned Copper Rivet Steamship Hose, extra heavy 1 inch, Single Copper or Tinned Copper Rivet Steamship Hose, extra heavy 1 inch, Single Copper or Tinned Copper Rivet Steamship Hose, extra heavy 50	Inter. Diam. Inter. Diam. Inter. Diam. Inter. Diam. Inter. Diam. Inter. Diam. Inter. Diam. Inter. Diam. Inter. Diam. Inter. Diam. Inter. Diam. Inter. Diam. Inter. Diam. Inter. Diam. Inter. Diam. Inter. Diam. Inter. Diam. Inter. Diam. I 25 I 159 I 189 I 189 I 189 I 1 20 I 1 20 I 1 25 I 1 25 I 2 20 I 3 3 4 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4
RUBBER SUCTION HOSE. SMALL SIZES ON SPIRAL WIRE Per Foot. Inter Diam. 1 inch	RUBBER-LINED LINEN HOSE. SEAMLESS AND CAPABLE OF GREAT RESISTANCE. 11/2 inch diameter, per 1001
on Galvanized iron rings, or Galvanized spiral band iron. For hand and steam fire engines, wrecking pumps, mining, etc.	Fire Dep't size
ON GALVANIZED IRON RINGS, OR GALVANIZED SPIRAL BAND IRON.	ANTISEPTIC LINEN HOSE. I inch diameter, per foot 1
ON GALVANIZED IRON RINGS, OR GALVANIZED SPIRAL BAND IRON. For hand and steam fire engines, wrecking pumps, mining, etc. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. 1 Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam.	ANTISEPTIC LINEN HOSE. I inch diameter, per foot 1 1/2 " 47 1 1/4 " 52 2 " 65 2 2 " 70 2 3/4 " 77 2 2 " 80 N. Y. Corp'n Size 80
ON GALVANIZED IRON RINGS, OR GALVANIZED SPIRAL BAND IRON. For hand and steam fire engines, wrecking pumps, mining, etc. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam. Per Ft. Inter. Diam.	ANTISEPTIC LINEN HOSE. I inch diameter, per foot

THE BABCOCK FIRE EXTINGUISHER.

(Fig. 171.)

Improved Copper Extinguisher, with 6 sets charges Improved Steel Extinguisher, with 4 sets charges.....

THE CHAMPION FIRE EXTINGUISHER.

(Fig. 172.)

Extinguisher and charges chemicals, \$45 00 Extra charges, per box (four sets).....

HOSE JACKET, OR REPAIRER,



Fig. 173

For repairing burst hose, without stopping the flow of the water. Suitable to all kinds of hose.



Fig. 172.

GALVANIZED IRON PAILS,

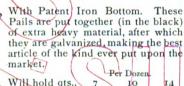






Fig. 174.

OAK PAILS.

	Ordinary, per dozen\$	
	Heavy, "	
	Ex. Heavy, "	
	Either with plain or galvanized iron hoops.	
1		
	FIRE BUCKETS.	
/	10/10/2011/2	
	(Fig. 176.)	1
	Rubber with Rubber Handle, per dozen \$30	0

Rubber, flexible, with Miller's Stiffened Bot-

Fig. 176.

PAPIER-MACHE PAILS.



Fig. 177.

Fig. 178.

No.	I,	Light	Pail, w	vith l	Hoop at	Botto	om, Brass Ears and Bailpe	r doz.	\$13 50
**	2,	Heavy	y "	14	**	Top a	nd Bottom, Brass Ears and Bail	**	16 50
"	3,	Extra	Heavy	Pail,	with Ho	oop at	Bottom, heavy Iron Ears and Bail	**	16 50
"	4,	"	"	**	**	"	Top and Bottom, heavy Iron Ears and Bail	**	18 00

NOVELTY FOLDING PAILS.







Fig. 180.-Folded.

Neat, compact, convenient, and useful.

Phese Pails are made of enameled rubber cloth, coated on both sides, with top and bottom hoops supported by jointed side braces, mounted to correspond with carriage trimmings and harness.

Japanned Mountings, per dozen.

NOVES' CASTOR OIL HOSE DRESSING.

This Hose Dressing has been in use for several years. Its merits have become fully established, and it is now in use in a large number of Fire Departments. It prevents Hose from rotting, protects it from the action of the atmosphere by closing the pores of the leather, creates a waxy surface, and forms a coating upon the inside, after permitting sufficient oil to permeate the leather. Its consistency being always uniform, it does not congeal, and is always ready for use in any kind of weather. Neat's foot oil should never be used in the oiler, as it congeals in cold weather and does not work well, oils the Hose very unevenly, and in warm weather is so thin that a too great quaptity is absorbed by the leather. Full directions accompany each package.

Hose Dressing, per gallon. \$1 75

GUTTA-PERCHA.

Crude, per pound...... \$2 00 | Chips, per pound.....

INDIA RUBBER BALLS, FOR VALVES OF STEAM PUMPS.

I ji	1011			Copery open	\$0,05	21/4 inch diam.	per doz.	 \$7	25
1 1/8	"/	"	- 66		I 35	21/2 " "	**	 9	00
14	"	("	""		I 75	234 ("	1.	 12	00
13/8	**	"	"		2 25	3 "	14	 15	00
I 1/2	44	**	"		2 75	31/2 " "	16	 23	00
158	**	"	66		3 25	334 "	16	 28	00
1 34	"		44		4 25	4 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	"	 32	00
1//8	"	_"	"		5 25	4½ " "	"	 50	00
2	"	**	44	• • • • • • • • • • • • • • • • • • • •	6 25	5 " "	4, 0	 68	00

PURE RUBBER CEMENT.

No.	3,	Half Pints,	per do	Z	 Sand		\$4	80
46	2,	Pints,	44				9	
"	I,	Quarts,	**		()	/	18	

BALANCED HOSE CART AND REEL.

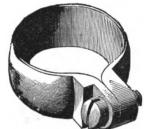


The above cut is a representation of a Balanced Hose Cart, with wheels 36 inches in diameter, all wrought iron frame and hose reel, of sufficient capacity to carry 300 feet 11/2 inch, or 200 feet 2 inch hose.

Price.....\$80 oo and up.

Hose Reels, for factories, to order.

HOSE COUPLINGS. ETC.



HOSE BANDS, with Screw.

(Fig. 182.)

1 1½ 1½ 2 25 30 35 46 cents. Size 3/4 Price, each.22 25

RATH'S PAT. HOSE BANDS.

(Fig. 183.)

Size.... ½ ¾ 1 1¼ 1½ 2 2¼ 2½ Per doz.\$0 75 0 75 1 50 2 00 2 50 3 30 4 25 4 25



Fig. 182.

EARLES PAT NOV. 1875.



Fig. 184.

 Size.
 ½
 ¾
 1
 1½
 1½
 1½
 2
 2½
 2½
 2½

 Price, per doz.
 \$0 50
 0 75
 1 00
 1 50
 2 00
 2 50
 3 00
 3 50
 4 00

 HAND CLAMPS for same, \$2 00 each.
 VISE CLAMPS, ½ to 1 inch, \$12 00 per doz.



Fig. 185. CLOSED.



THREE WAY HOSE PIPES.

PATENT

(Figs. 185, 186, and 187.)

Three-Way, 3/4 inch..... \$2 00 I " 2 25



|'Fig. 188. SPRAY.

SLIDE HOSE PIPES.

PATENT.

(Fig. 188.)





Fig. 189. PLAIN SOLDERED TIP.

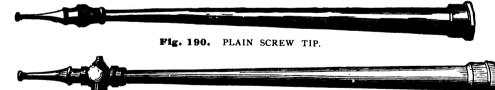


Fig. 191. COCK ON SMALL END.



Fig. 192. COCK ON LARGE END.

Size		3/4	1	11/4	11/2	13/4	2	21/4	21/2
Short, Plainpo	er doz. \$	7 00	8 00	15 00	21 00	- /4	27 00	-/4	36 oo
" Screw Tip	**		11 00	•			-, 55	•	30 00
" Cock on small end		4 00	20 00						
" " large "		6 00	22 00						
Long, Screw Tip		8 00	24 00	30 00	42 00	48 oo	60 00	04 00	114 00
" Soldered Tip		2 00	18 00	27 00	36 oo	7		94 00	
" Cock on small end	" 2	4 00	33 ∞	50 00	57 00	72 00	84 00		
" large "	2	7 00	36 ∞	54 00	66 oo	80 oo	96 00		



COMMON-FOR RUBBER HOSE.

(Fig. 193.)

Size.... ½ ¾ 💥 1 1¼ 1½ 1¾ 2 2¼ 2½ Per doz.\$3 50 3 50 7 00 7 00 15 00 21 00 24 00 33 00 36 00 50 00 60 00

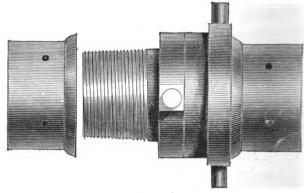


Fig. 194.

WITH BAND, FOR LEATHER OR LINEN HOSE.

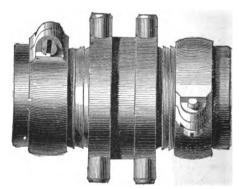


Fig. 195.

WITH CLAMPS, FOR RUBBER HOSE.

21/2 3 inches. Price, per doz. \$50 00 60 00 80 no

FIRE HOSE COUPLINGS.

Size, 21/2 inches.

Allen's Pa	tent S	crew Co	upling,	per do	z \$ 78 oc
Gaylord	**	**	**	**	\$4 oc
Eccentric	**	**	**	••	
Feyhs	**	••	••	**	96 av
Jones	**	**	**	••	120 00
Kennedy's		**	••	••	

INGERSOLL'S PATENT COUPLINGS.

FOR ROCK DRILLS.

1 " 3 25

WROUGHT IRON SPANNER.

PLAIN OR GALVANIZED.



_		Fig.	
lain,	per doz	 	 \$ 9 ∞
alvanize	d, "	 	

HOSE AND PIPE NIPPLE.

TO CONNECT HOSE TO PIPE THREAD.

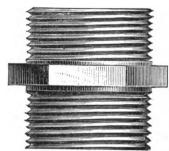


Fig. 197.

Size...... 1/2 3/4 1 11/4 11/2 2 21/2 3 31/2 4 Price, each, \$0 45 0 50 0 60 0 80 1 00 1 20 2 25 3 50 4 50 5 50

Hose	CAPS,	WITH	CHAIN.
------	-------	------	--------

_	(Fig., 19	8.)	
Size	3/4	1	11/4
Price, each	. \$ 1 00	1 50	1 75
Rough, without Chain or Swivel	50	75	90

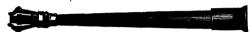


Fig. 200.

PATENT RUBBER COMBINATION HOSE PIPE AND SPRINKLER.

WITH STOP COCKS.

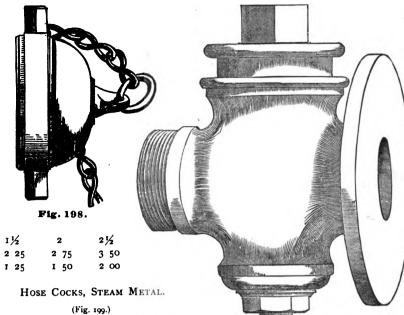
I	box,	10	pipes,	*	(inch	
1	"	10	"	I	" ····· 9 oo	
				L	EATHER HOSE PIPES.	
·L	eathe	r, 1	with N	oz	zle and Screw Butt, each\$11 00	
L	eathe	r, f	or ship	u	se 4 00	

BOYD'S PATENT RIVETED COTTON HOSE PIPES.

36 in., complete with Butt and Tip (Caswell's Patent), each, \$15 00 " " " 18 00

Fig. 201.

HOSE CAP AND COCK.

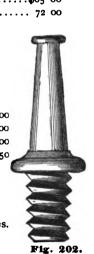


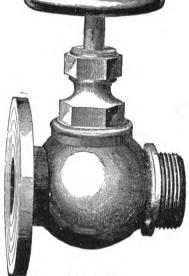
Size.....21/4 21/2 inches. Price, each.....\$16 00 20 00

Fig. 199. HOSE VALVE.—Steam Metal.

CASWELL'S PATENT FOR COTTON AND LINEN HOSE.

2 inches, per doz.....\$65 00 21/2 " " 72 00





Size. 2 21/4 2 1/2 in Price, each...\$16 00 20 00 23 00

SPRINKLERS.

(Fig. 201.)

1 1/2	inch, for	3/4	and	I	inch	Hose	Pipes, per	doz\$5 o	ю
2	"	34	**	I	**	**	**	" 8 o	Ю
3	"	34	**	I	**	**	44	"12 0	Ю
Wit	h Nipple	e fo	r Ru	ıb	ber I	łose a	dd	I 5	0

HOSE NOZZLES.

TO TIE ON.

(Fig. 202.)

Size...... ½ ¾ 1/2 inches. Per doz.....\$5 00 \$6 00 6 00 8 00 9 00 12 00

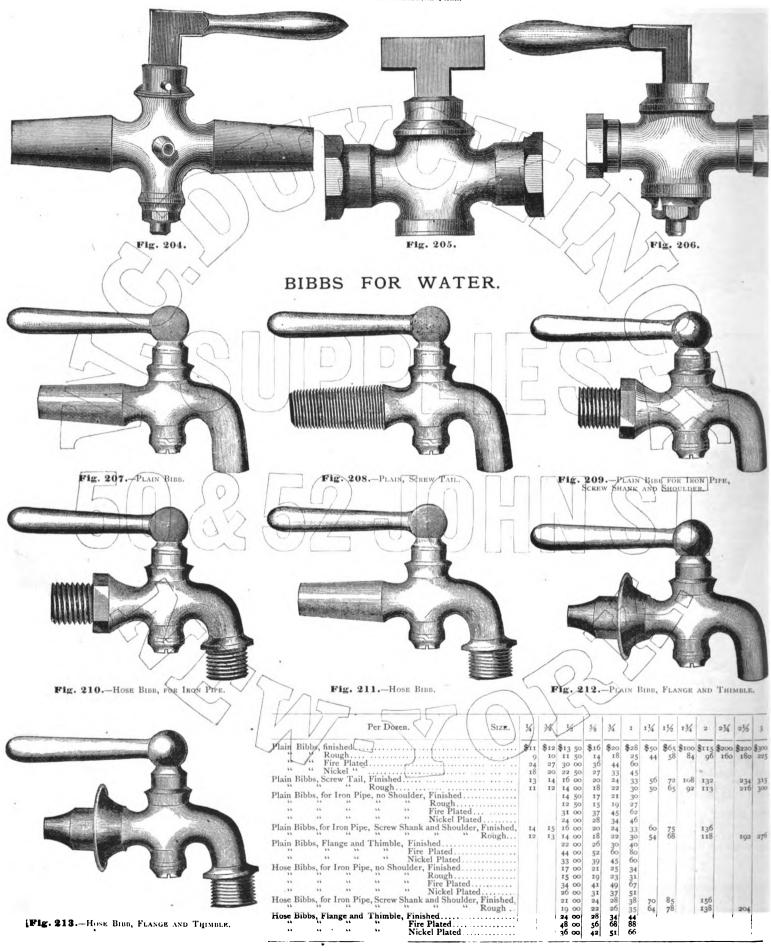
ROUGH STOPS.

PER DOZEN

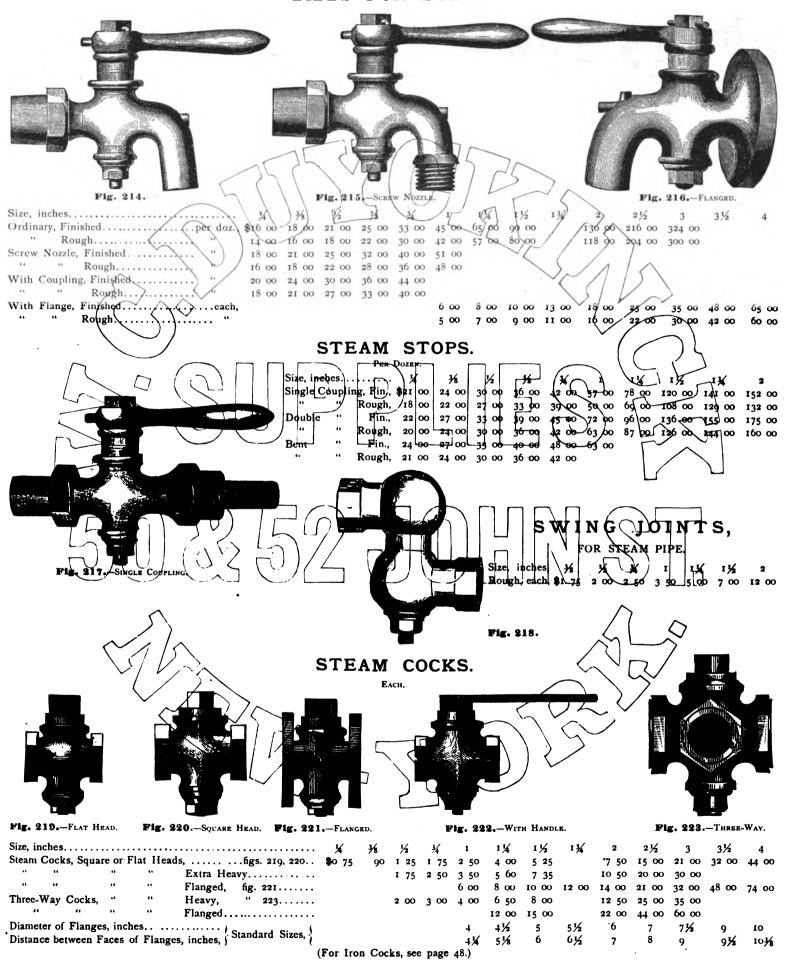
	*	3/8	1/2	5 ∕8	*	1	11/4	1 1/2	13/4	2	21/4	2 1/2	3	3½	4
Rough Stops, Lever Handle	\$9 00	\$9 00	\$11 00	\$13 00	\$15 00	\$24 00	\$40 OC	\$50 00	\$84 00	\$96 oo	160 00	180 00	225 00	300 00	550 CO
" " for Lead and Iron Pipe		12 00	14 00	16 00	18 00	27 00	:	1		1		1			
Round Way Stops, T or Lever Handle			15 00	18 00	24 00	39 00	60 00	72 00	1		1	i			
" " with Waste.			16 50	I9 50	25 50	41 00	63 00	75 00		l			ı		
Rough Stop, T Handle, with or without Waste		8 50	9 00	10 50	12 50	21 00	33 00		1		1	ì			
Rough Stop, T Handle, Nut and Washer Bottom	9 00	9 00	11 00	13 00	15 00	24 00	40 00	50 00		96 00		1	1		
Rough Stop and Waste, T or Lever Handle		10 00	12 00	14 00	16 00	25 00	42 00	_		•	l	}			
Hose Stops for Lead or Iron Pipe	1			•	24 00	33 00	′ 60 0 0	75 00	115 00	136 00	180 oc		300 00		
Rough Stops, T or Lever Handle, screwed	12 00	14 00	16 00		21 00	30 00	50 00	63 00		117 00) <u>'</u>				
Rough Stops, T or Lever Handle, screwed, one)	!		1		-0		٠	-6				!			
end for Lead and the other for Iron Pipe	11 00	12 00	14 00		18 00	27 00	45 ∞	50 00	Ì	106 00	' 1	1			
Rough Stop and Waste, T or Lever Handle, for [-0											,	
Iron Pipe		15 00	18 00	i	24 00	33 00	54 00	i							İ
Round Way Stops, T or Lever Handle, for Iron Pipe,		18 00	21 00		30 00	45 00	66 00	84 00		164 00	ا			į l	
Round Way Stops and Waste for Iron Pipe, T or (1	l	1	1		١ .	1	1	:		
^ Lever Handle		19 00	22 00	1	31 00	40.00	68 o o	1		l			1	ì	l

ROUGH STOPS FOR WATER.

FOR PRICES SEE PRECEDING PAGE.



BIBBS FOR STEAM.



CHECK VALVES.



Fig. 224. Horizontal. Size, inches..... 4 Hori. or Angle, ea., \$0 75

Size, inches.....

Vertical..... " Cap on Side Iron Body, Screwed, " " Flanged,







IF.	ERTIC		VERT	Fig.	226 CAP 01	Fig. 227. Angle.				
¾ 8	1/2	34	I	11/4	I ½	2	21/2	. 3	31/2	4
75	1 00	I 25	I 75	2 75	3 50	6 oo	13 00	16 00		
	1 00	I IO	I 50	2 50	3 25	5 50	10 00	15 00		
	I 30	1 60	2 25	3 50	4 50	7 00	14 00	18 00		
		•			3 00	5 00	8 00	12 00	16 oo	32 00
						6 00	9 00	13 00	18 00	25 00

PUMP VALVES.

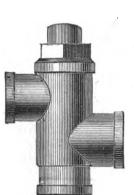


Fig. 228.

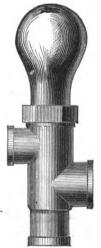


Fig. 229.



Fig. 230. nd Air Chamber.

						W I	тн А	IR (CHAN	BER.	WITH AIR COCK A			
Size	, iı	nch	es				1/2		34	1	11/4	1 1/2		
NO.	ı,	ng.	228,	eacn	١	\$ 2	50	3	50	4 50	6 00	10 00		
46	2,	44	229,	"	• •	3	75	4	50	6 00	8 00	19 00 13 00	Á	
	٥,		230,		• •	4	50	5	25	0 75	9 00	13 00		
TRA	D	D/	\	20	0				~-				1	

IMPROVED STRAINER AND REST,

(Fig. 231,)

For the lower end of Iron Suction Pipe, making a nice Strainer, Rest, and Steadier for the same.

1 ¼	Suitable in. calibre		Pipe.	each	Iron, for Pipes.	Brass, for Suction Hose. \$1 25	
1 1/2	44	"	<u>F</u> -,	"	. 87	I 50	
2	**	**	44	"	. 1 12	2 50	
2 1/2	"	**	"	"	. и 35	3 50	Fig. 232.
3	**	"	"	" …	. I 75.	5 00 F	OOT VALVE WITH STRAINER,

FOOT VALVES AND STRAINERS.

(Fig. 232.)

Size, inches, ¾ 1 11/4 11/2 Brass, for \\ \\$2 50 3 00 4 00 6 00 7 50

Fig. 231.

CHECK VALVE.

(Fig. 233.)

Fig. 233 shows our Improved Check Valve, suitable to place at any point in the 1 inch, each.... \$2 25

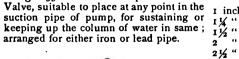




Fig. 233.

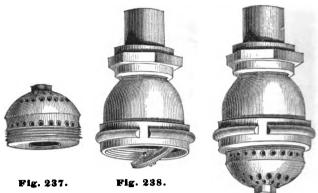


" 2 50 " 2 75

" 3 25

Fig. 234. Fig. 235. Fig. 236.

IMPROVED LOWER CHECK VALVE, WITH STRAINER ATTACHED.



Figs. 237, 238, 239 show our Improved Lower Check or Foot Valve, designed for the lower end of the suction pipes to pump. where it is desired to keep up the column of water, and there is no danger of its freezing. We can furnish these suitable for any of the following sized pipes, namely: 1, 11/4, 11/2, 13/4, 2, 21/2, and 3 inches.

Iron, thread tapped in for iron pipe without the brass tube and

Fig. 239.

					e brass tube a
		Iron.	Brass.	Galvanized.	coupling.
I inch,	each	\$2 00	\$ 2 75	\$2 25	\$1 25
11/4 "	"	2 25	3 50	2 50	I 50
11/2 "	"	2 50	4 25	3 00	1 75
134 "	"	2 75	4 50	3 25	2 00
	"	3 00	5 00	3 50	2 25
21/2 "	"	3 50	6 00	4 00	2 75
3 "	"	4 50	7 00	5 00	3 75

IMPROVED CHECK VALVE.

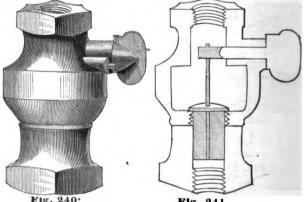


Fig. 240. Fig. 241. Figs. 240, 241 are cuts of our Improved Check Valve, designed to place in the Suction Pipe of the Pump, just below the same, at a convenient point to get at to let back the water to avoid freezing, by simply turning the thumb-screw, which, as is shown by the sectional drawing, lifts the valve, so that the water will run back. These are particularly adapted for the rotary pumps.

Suitable for 1 or 11/2 inch pipe, each......

The Patent Mushroom Strainer. FOR ALL SUCTION PUMPS.

Pipe, in., 1 11/2 11/2 2 \$1 00 1 25 1 75 2 25 Larger sizes to order.

Iron thread tapped in for iron pipe, without brass tube and coupling.

\$1 50



4 25

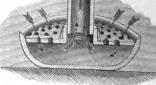


Fig. 242.

SUCTION BASKETS.

(Figs. 234 and 236.) Size, inches..... Iron, each..... 1 00 1 75 2 50 Size, inches, $1\frac{1}{2}$ 2 $2\frac{1}{4}$ 2 $2\frac{1}{2}$ 3 $3\frac{1}{2}$ 4 5 6 7 8 Brass, each, \$4 00 5 00 6 00 7 00 10 00 13 00 17 00 20 00 30 00 40 00 60 00 Fig. 235 to order.

Digitized by Google

Brass

\$3 25

4 25

5 00

6 00

Galvanized

\$2 50

2 75

3 75

4 25

5 50

FITTS' PATENT GOVERNOR AND STOP VALVES.



Fig. 243 represents the CHRONOMETER GOVERNOR VALVE. The ports in this valve are so arranged as to bring the pressure of steam on both sides of it, thereby relieving it of all friction in moving on its seat. And as no packing around the stem or elsewhere is necessary, it is superior for this purpose to any other ever offered to the public.

Fig. 244 is a STOP VALVE, and is adapted to any purpose for which such are re-



Fig. 244.

quired, either for steam, water, gas, or air.

It has been used in various parts of the country, for the last six years, and has never failed to give entire satisfaction, more especially where a high pressure of steam is used.

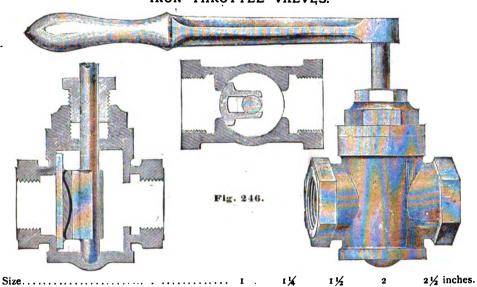
Fig.	243
rız.	243

7

Iron Bodies.

Size 34	I	11/4	11/2	2	21/2	3	4	5	6 inches.
Chronometer\$5 50	8 00	11 00	15 00	20 00	25 00	35 00	60 00		120 00
Stop	4 00	5 00	7 50	11 00	15 00	20 00	35 00	75 00	

IRON THROTTLE VALVES.



11/ Price, each.....\$8 75 10 00 11 25 16 25 25 00

IMPROVED REGISTER VALVE.

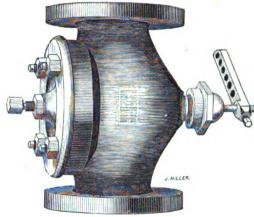


Fig. 245.

It is used extensively in Saw-Mills, as a Sawyer's Valve, to stop and start the engine by a cord running to the sawyer.

Size1½	2	21/2	3	31/2	1	5 in
Diam. of Flanges, 51/2			8		10	-
Length 7			I 2	13	14	16
Price\$10	13	17	23	27	33	44



BALANCE OR GOVERNOR VALVE.

BRASS.

Size..... 1 11/4 1 1/2 2 in. Price, each. \$4 00 5 25 7 00 13 00

Fig. 247.

BUTTERFLY VALVE.

Size..... 11/4 11/2 2 21/2 3 in. Comp't'n,\$4 50 5 00 7 50 12 00 16 00 Iron.... 2 50 3 00 4 50 6 00 9 00

8 inches.





BACK PRESSURE VALVES.

(Fig. 249.)

21/2 31/2 Size.. 43 00 16 00 33 00 Screwed Ends, each..\$10 00 23 00 14 00 20 00 Flanged " 18 00 25 00 35 00 45 00 11 00 15 00 22 00

BACK PRESSURE VALVE, WITH SPRING.

(Fig. 250.)

31/2 inches. 16 00 22 00 30 00 Price......\$12 00



Fig. 250.



AIR VALVES.

FULL SIZE. IRON PIPE THREAD.

(Figs. 251 and 253.)



1/8 or 1/4 in. \$9 per doz.



Fig. 252.

VACUUM VALVE. (Fig. 252.) 14, 3%, and 1/2 inch.

Each, \$1 00



LOW PRESSURE SAFETY VALVE.

(Fig. 254.)

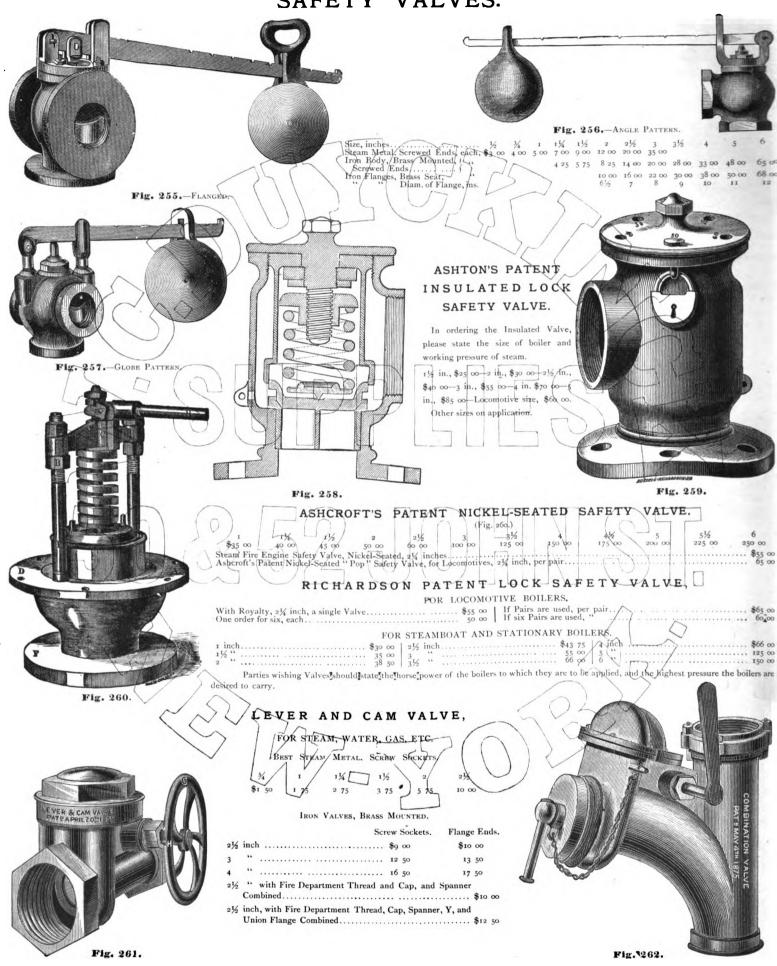
Size... I 11/4 1 ½ in. Price.. \$2 75 3 25 4 00







SAFETY VALVES.



GLOBE, ANGLE, AND CROSS VALVES.

GEORE, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST, INVEST,
Fig. 263.—Globe Valve. Fig. 264.—Angle Valve. Fig. 265.—Cross Valve. Fig. 266.—Flanged Globe Valve. With York. STEAM METAL.
Size
Cross, Globe, Flanged
Size
" " Flanged
Distance between Faces
Size
RUSSELL'S PATENT VALVES. WITH COMPOSITION DISK.
Size, inches
Russell's Patent Straightway or Gate Valve. Russell's Patent Gate Valve. With Patent Composition Disk.
Size
Iron Body
43

EDDY PATENT OPEN-WAY VALVE.

In ordering Valves, please be particular to state the kind required, and in every instance give number of class to which it belongs, thus insuring accuracy in filling orders.

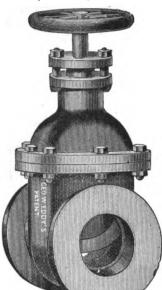


Fig. 269.

inch. inch. inch.

2 21/2 3 3½ IRON, BRASS MOUNTED, ETC.

CLASS II.—(Figs. 269, 270.)

ALL HAVE DOUBLE GATES.

BRASS MOUNTED.

Flange Ends.

Screw Socket.

LIST OF CLASSES.

- 1. Brass Valves, Screw Ends.
- 2. Iron Valves, Brass Mounted. All Iron Valves, and Valves with Iron Faces, Screw or Flanged Ends.
- 3. Light All-Iron Gas Valves, Hub Ends.
- 4. Heavy Valves for Water Mains, Hub Ends. Extra Flange Valves.
- 5. Quick-Opening Valves, Iron, Brass Mounted, Screw or Flange Ends.
- 6. Quick-Opening Brass Valves, Screw Ends.

Fig. 269. Iron Valve, Brass Mounted, Flange

Fig. 270. Iron Valve, Brass Mounted, Hub Ends, for Water or Gas Mains.

Fig. 271. Quick-Opening, Sliding Stem Valve.

Figs. 272, 273. All Brass or Iron Body, Brass-Mounted Valve, Screwed Ends.

BRASS VALVES, BEST STEAM METAL.

CLASS I .- (Figs. 272, 273.)

ALL HAVE DOUBLE GATES.

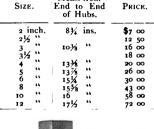
Size, inches		 3/4	I	11/4	11/2	2	21/2	3
Price	 ,	 \$ 1 75	2 00	2 90	4 10	6 ∞	12 00	17 (10

ALL IRON, FOR GAS.

CLASS III.-(Fig. 270.)

ALL HAVE DOUBLE GATES.

Size.	Meas, from End to End of Hubs,	PRICE.
2 inch.	8¾ ins.	\$7 00
21/2 "		12 50
3 "	103/8 "	16 00
31/2 "	, -	18 00
2½ " 3 " 3½ " 4 " 5 " 8 "	1236 "	20 00
ž "	13¾ " 13¾ " 15¼ "	26 00
δ "	1516 "	30 00
g u	15% "	
10 "	16 "	43 00 58 00
		72 00
12 "	171/2 "	72 00



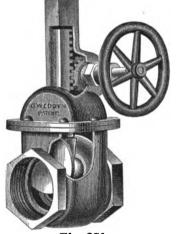


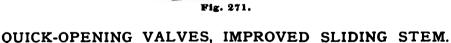
Fig. 270.

EXTRA HEAVY IRON, BRASS MOUNTED.

CLASS IV.—(Figs. 269, 270.) ALL HAVE DOUBLE GATES.

Class IV. designates the regular heavy pattern Water-Main Valve, with Spigot or Hub Ends, also extra Flange Valves.

Size.	Diameter of Standard Flange.	Face to Face	Measurement from End to End of Hubs.	PRICE.	
2 inches.	7 inches.	61/4 inches.	8¾ inches.	\$8 oc	
	8 "	6½ inches.	1038 "		
3 " "	81/2 "	774 "	1078	17 00	
	9 "	7 % " 938 "	1336 "	22 00	
5 "	10 "	103/4 "	137% "	30 00	
4 5 6	11 "	1215	151/4 "	36 oc	
	13 "	1278	1558	50 00	
2 "	18 "	145/8	16 " 171⁄2 "	66 oo	
	20 "	1534 "	171/2 "	90 00	
16 1	22 "	161/4 "	171/2		
8	24 "	161/4 "	191/2 "		
ю "	26 "	1738	191/2		
4	30	20 "	2034		
30 " 36 "	36 "	221/2 "	24 "		



IRON, BRASS MOUNTED.

CLASS V.

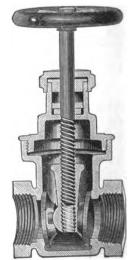
		ALL HAVE DOU	BLE GATES.			
Size.		BRASS MOUNTED.	ALL IRON, OR IRON FACES			
	Hubs.	Screw Socket.	Flange.	Screw Socket.	Flange.	
2 inch.	\$10 00	\$8 30	\$9 ∞	\$ 7 25	\$8 50	
21/2 "	15 ∞	13 75	14 65	13 35	14 30	
3 "	20 00	17 30	18 20	16 40	17 30	
3½ "	25 00	21 30	22 20	20 40	21 30	
4 "	30 00	24 50	25 40	23 20	24 10	
5 "	35 ∞	30 6 0	30 60	28 90	28 go	
6 "	40 00	36 75	36 75	35 ∞	35 ∞	
8 "	55 00		52 50		48 oo	

ALL BRASS.

CLASS VI.

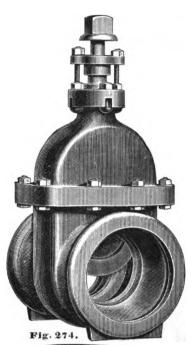
ALL HAVE DOUBLE GATES.

Size.	Price.
ı inch.	\$3 30
11, "	4 50
11/2 "	5 40
2 "	7 8o
21/2 "	13 60
з "	20 50









THE CHAPMAN VALVE.

IRON BODY WATER VALVES.

With Double Gate (Composition Mounted and Babbitt Metal Seats) to bear extra heavy pressure on either face.

WITH HUB, FLANGE, OR SPIGOT.

Diameter of Pipe.... 2 3 4 6 8 10 12 14 "Flanges, 6 8 9 11 13 16 18 21 Price, each......\$14 00 17 00 23 00 38 00 52 00 66 00 90 00

IRON BODY GAS VALVES.

With Double Gate, Composition Stuffing Box and Babbitt Metal Seats to bear heavy pressure on either face.

WITH HUB, FLANGE OR SPIGOT.

Indicators and Floor Stands furnished to Order.

In ordering, please state whether to turn to right or left hand to open, and if nut or wheel on spindle is required.

COMPOSITION STEAM AND WATER VALVES.

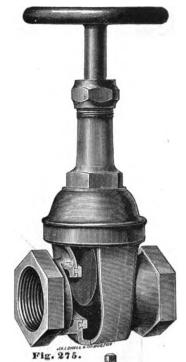
WITH BABBITT METAL SEATS.

3 inches. 22 00 26 00 Flanged "

IRON BODY STEAM AND WATER VALVES.

WITH COMPOSITION PLUG, SPINDLE, STUFFING BOX, AND GLAND AND BABBITT METAL SEAT.

Size 2 Diameter Flanges 6	2½ 7	3 8	3½ 8½	4 9	5 10	6 inches.
Price, each, Screw Ends\$7 50		14 50	18 50	21 00	27 50	33 00
" Flanged " 8 35	11 75	15 50	19 50	22 00	27 50	33 00
1.ar	orr Siere	Furnish	d to Ord			



LUDLOW'S PATENT SLIDING STOP VALVES.

BRASS VALVES .- DOUBLE GATE.

PARALLEL SEATS. NEW STYLE, GLAND IN PACKING BOX.



Extra Charge for Slide Stem and Lever. 1/2 inch, Brass \$1 30 50 cents. " 3/4 г 65 50 2 30 50 **\$**55 3 2519 50 75 Larger Sizes made to Order.

In packing the Brass Valves, see that the small ring is at the bottom of the chamber, and the gland above the packing. Also, avoid daubing the faces with lead.



Fig. 279.

Fig. 276. IRON VALVES.—SINGLE GATE.

BRASS MOUNTED, WITH GOOD STEAM METAL, NOT YELLOW BRASS. Screwed Socket and Flanged, up to 6 inch. inclusive have brass nuts and glands to Packing Box. Valves, 21/2 to 5 inch., will bear heavy pressure either side of gate.

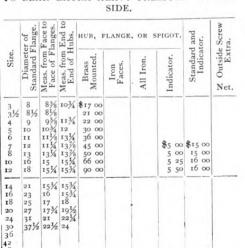
		eter of Flange.	Measurement from Face to Face of Flanges.	ement and to Hubs.	ace to Screw ket.	BRASS M	OUNTED	ALL IRON	AND IRON	Outside Screw Extra,
•	Size.	Diame Stan'd	Measur fre Face to Flar	Measurement from End to End of Hubs	Measurement from Face to Face of Screw Socket.	Screw Socket.	Spigot Flange, Hub.	or Socket	Spigot, Flange, or Hub.	Net.
•	2½ 3 3½ 4 5	7 8 8½ 9	9% 10¾	103/4	536 814 8 814 1034	\$10 50 14 00 17 50 20 00 26 50	\$11 25 15 00 18 50 21 00 26 50	13 00 16 00 18 50 24 50	\$11 00 14 00 17 00 19 50 24 50	
	О	11	111/8	121/2		32 00 lub, Flan	32 00		30 00_ Standard	_\$4 ∞
		 	1		Brass Moun'd	Iron Faces.		n. Indicator.	and :	
	7	12	1111/4	13%	\$42 00	\$40 00	\$38 oc	\$5.00	\$15 00	4 50
	7 8	13	11	141/4	48 00	46 00	44 00		15 00	5 00
	10	16	1238	14.,	60 oo	57 50	55 ∞		16 00	5 50
	12	18	12 1/8	141/4	75 ∞	73 00	70 oc	5 50	16 00	6 00
	14	20	133/4	151/4				6 00	17 00	8 00
	16	22	1378	151/2				6 50	17 00	10 00
	18	24	14	1514	•			7 00	18 00	11 00
	20	26	151/2	17	i			7 50	18 00	15 00
	24	31	17	17				8 50	19 00	20 00
	_30	37		19			!		<u> </u>	
	Size. Bi				ull Mounted.	All Ir				for Slide and Lever.
		½ inc	hes.	\$5	50 50	\$5 25 5 75		\$4 75 5 50	8	6 ₅
					DOI	JBLE G.	ATES.			
						6 50		6 25	1.	65
		34			00	10 00		10 00		65

Fig. 276 represents our SINGLE GATE IRON VALVE. Fig. 279 shows one of our DOUBLE LARGE VALVES, intended to bear heavy pressure either side of Gate.

QUICK-MOVING SLIDE STEM AND LEVER VALVES. (Fig. 280.)

DOUBLE GATE IRON VALVES.

TO BEAR EXTRA HEAVY PRESSURE EITHER SIDE



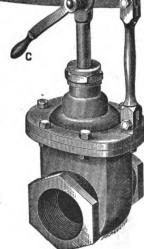
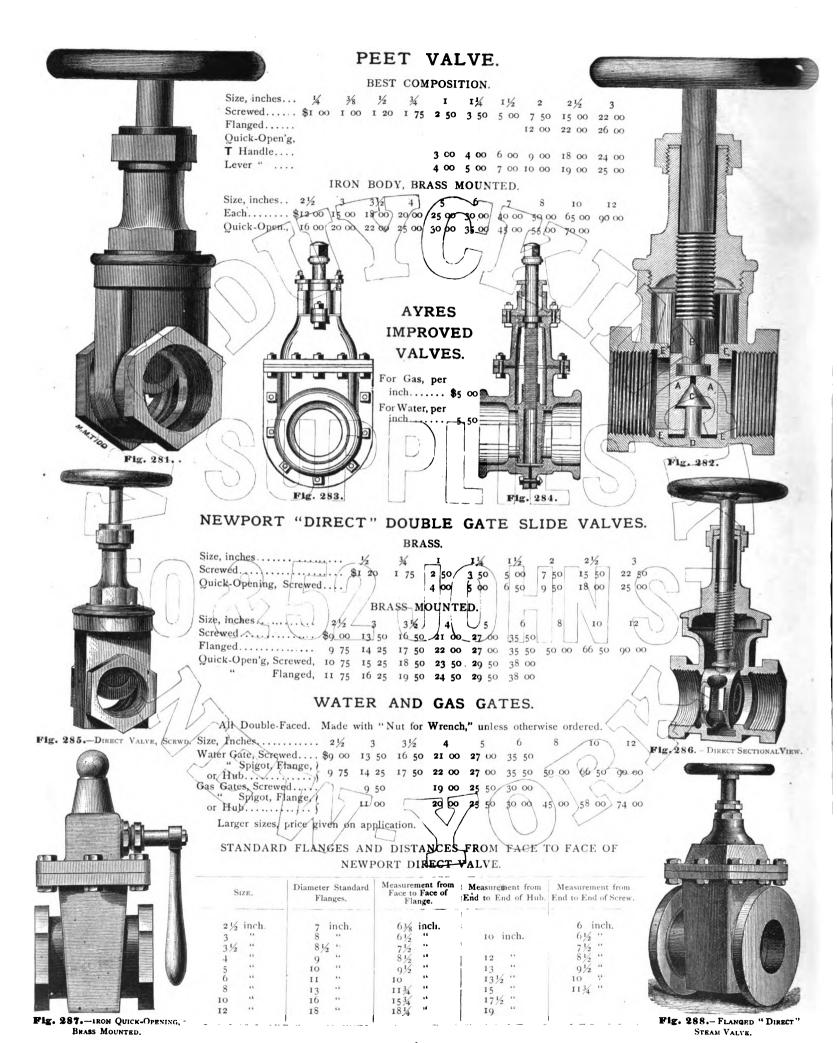
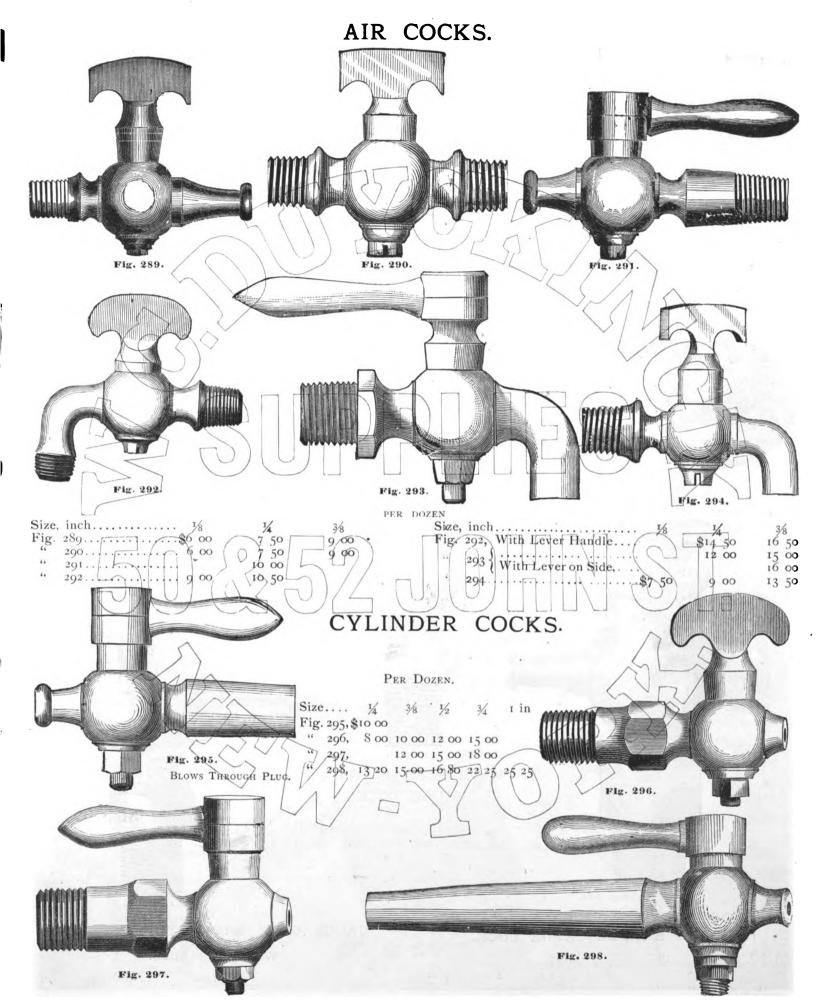


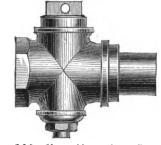
Fig. 280.

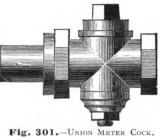




GAS COCKS.







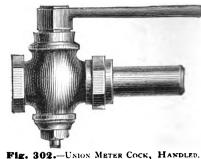
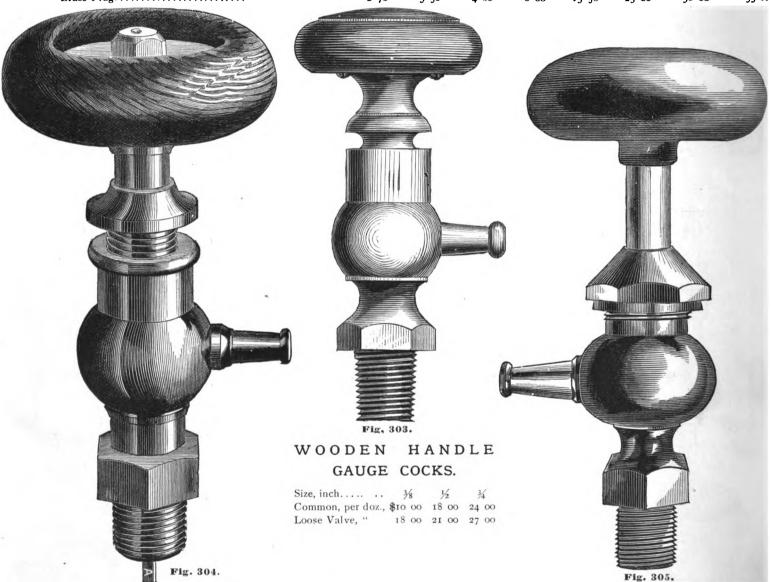


Fig. 299.—Gas Cock,	(March 1) 100	
FLAT OR SQUARE HEADS.	Fig. 300Union Meter Cock,	FLAT HEAD.
Size, inch		3∕8
Gas Service	each, \$0 60	, 6o
Plain Meter		
Union "		8o

	Fig. 3	01UNION	METER COC	K,	177			
		SQUARE H	EAD.		Fig. 302	2.—Union M	ETER COCK, 1	I ANDLED.
	1/2	3⁄4	1	1 ¼	I ½	2	21/2	3
	80	1 00	1 50	2 80	3 80	6 00	10 00	16 œ
•	8 o	I 10	I 50	3 00	4 00	6 00		
	1 00	1 30	I 75	3 50	4 75	7 00	12 00	20 00
O	N CO	CKS.						
	I	11/4	1 1/2	2	21/2	3	31/2	4
	I 25	1 65	2 40	3 50	5 00	7 00	11 00	15 w

		IR	ON CO	CKS.				·		
Size, inch		*	I	11/4	11/2	2	21/2	3	31/2	4
Screwed Ends	\$0 75	95	1 25	ı 65	2 40	3 50	5 00	7 00	11 00	15 0
Flanged "						4 50	6 00	0 00	13 00	17 0
Brass Plug	I 30	1 70	2 20	3 00	4 00	7 00	12 00	18 00	30 00	40 0
Three-Way		-	1 90	2 50	3 25	5 00	8 00	14 00	21 00	32 0
" " Brass Plug			2 70	3 50	4 60	8 00	13 50	23 00	36 00	53 0



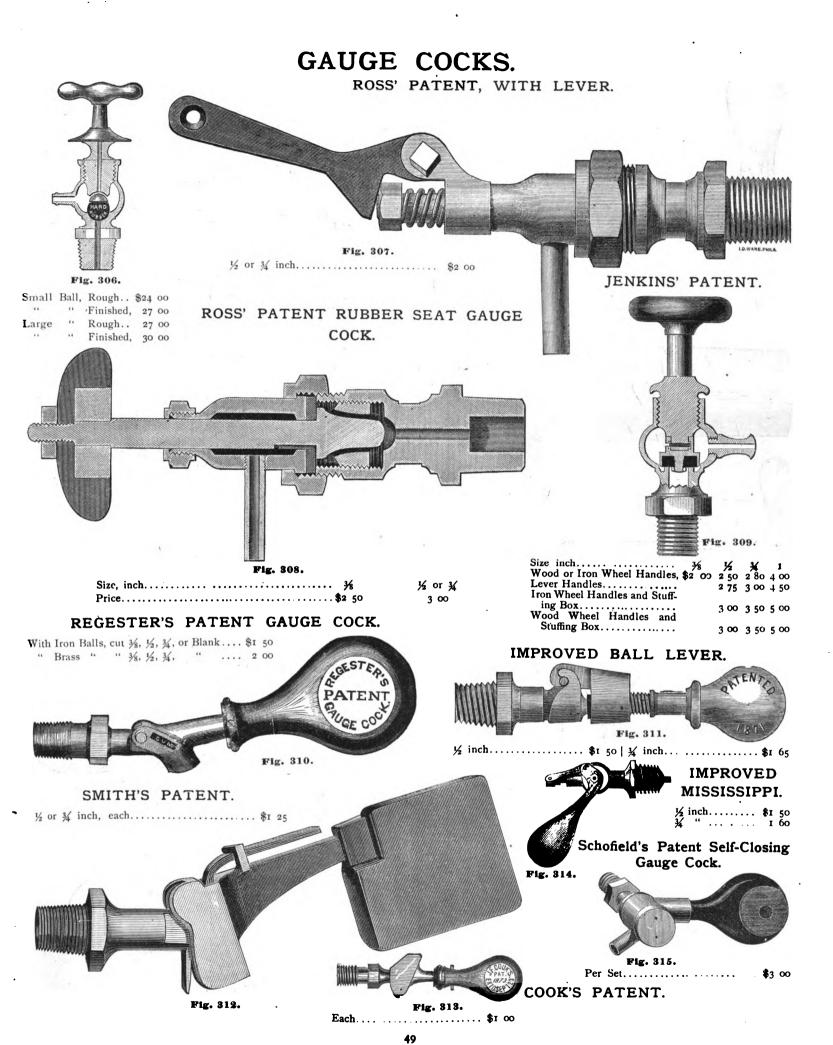
ASHCROFT'S IMPROVED SELF-CLEANING • WOODEN HANDLE GAUGE COCK.

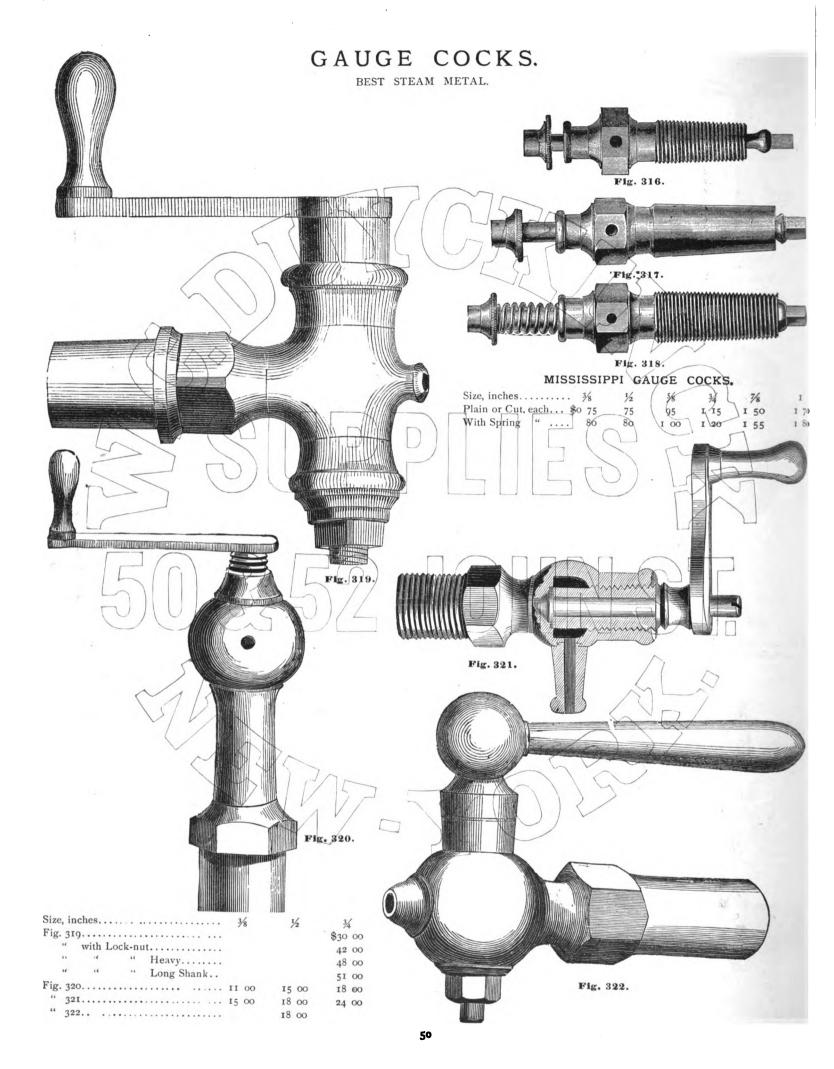
Size, inch	₹	1/2	34
Babbitt Seat, with Cleaner		3 00	3 25
" " without "	2 37	2 50	3 00
Conical "		3 25	3 50
Common "		2 00	2 25

GAUGE COCK WITH STUFFING BOX.

WOODEN HANDLE.

Size, inch	3/8	1/2	¥
Each	\$ I 15	1 35	1 70





WROUGHT IRON PIPE.

FOR GAS, STEAM, WATER, OR OIL.

Price per Foot, Plain.

\$0 06

06

07

07

121/2

18

22

31

46

60

80

1 00

1 25

I 50

2 00

2 85

3 59 9 to 14 inch Diameter at special rates.

Inside

Diameter.

1/s inch.

3/4

11/4

31/2

41/2

..

..

.. 116

..

..

11

..

..

..

..

10

Price per Foot, Galvanized, Rubber-Coat-

ed, or Enameled.

So II

11

12

16

22

30

34

45

70

90

1 50

(1 8o

2 20

3 25

Weight per Foot.

.24 lbs.

.42

.56 ..

1.13

1.67

2 26

2.60 2.65

7-55 9.00

10.73

12 49

14.36

18.77

23.41

28.35

5.77

..

.. .85

WROUGHT IRON SPIRAL RIVETED PIPES.



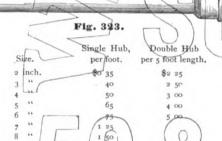
Fig. 324.

FLANGED CONNECTIONS, FOR PRESSURE USES.

Suitable for general use, where pressure and strength are necessary.

Inside	/ /	1 15		
Diameter.	Black.	Galvanized.	Dipped in Coal/Tar	Thickness, W. G.
3 inch.	\$0 22	\$0 28	\$0 64	No. 26
31/2"	23	30	24	1 25
4 "	25	33	29	" 24
41/2 "	28	35	29	" 24
5 "	30	45	36	" 23
6 "	35	50	41	" 22
7 "	45	70	50	" 21
8 "	50	75	58	** 21
9 "	75	1 10	63	" 20
10 "	1 15	ı 65	1 23	** 18
11 "	1 25		1 35	" 18
12 "	I 45		I 55	" 17
×0 11	- 6-		* **	II To

CAST IRON DRAIN, WATER, AND SMOKE PIPES.



15 Pipes less than 12 inch diameter are made 5 feet long (not including Hub); 12 inch diameter and over, 12 feet long.

2 50

3 50

Heavy Cast Iron Pipe, to sustain pressure, price per pound urnished on application.

LAP-WELDED AMERICAN CHAR-COAL IRON BOILER TUBES.

Outside Diameter.	Thickness Wire Gauge.	Weight per	Price per Foot
r inch.	.15	.7x lbs.	180 23
11/4 "	.15	.90 4	23
11/2 "	.14	1.25 "	/23
13/4 "	.13	1.66 "	23
2 "	.13	1.98 "	23
21/4 "	.13	2.24 "	25
21/2 "	.12	2.75 "	29
23/4 "	.12	3.04 "	33
3 "	.12	3.33 "	35
31/4 "	.11	3.96 "	40
31/2 "	.II	4.27 "	46
33/4 "	.11	4.59 "	53
4 "	.10	5.32 "	58
41/2 "	.10	6.01 "	67
5 "	.9	7.23 "	85
6 "	.8	9.35 "	1 20
7 "	.8	12.43 "	1 60
8 "	.8	15.11 44	2 25
9 "	-7	18.00 "	
10 11	.6	22.19 "	

Intermediate sizes not on list, same price as next size

LIGHT WROUGHT IRON SPIRAL

3 26

4 70

IO

LOCKED PIPES.

3 10



iameter.	Black.	Galvanized.	Dipped in Tar.	Numbered W. G.
3 inch.	\$0 18	\$0 24	\$0 IQ	No. 28
31/2 "	20	28	20	" 27
4 "	24	30	21	" 26
5 "	30	35	23	" 25
6 "	35	40	25	" 25
7 "	40	45	28	11 24
78 "	45	50	30	11 24

BRASS AND COPPER TUBING.

....

" 1 10

" т бо

30

Over 1/2 inch to 3/8 inch thick, inclusive.

1/4 inch thick or under

" 3/4

" 3-16 " " 26, " 3/8 " " 26,

. 1/2

Plain, to No. 20, inclusive, above 1/4 to 3 inch, inclusive, per lb., \$0 44 Nos. 21, 22, 23, 2 cents advance on List for each No. " 24, 25, 26, 4 "

All Mandrel Drawn Tubes, 5 cents advance on List Prices.

ZINC TUBING.

Per Pound.

Plain, \$0 28 Fancy, \$0 31 Scotch and Ex. Pat'ns, \$0 34

GERMAN SILVER TUBING.

4 6 9 12 15 16 18 20 85 95 1 10 1 25 1 40 1 45 1 55 1 65

SEAMLESS DRAWN COPPER AND BRASS TUBING.

LIST OF SIZES, WEIGHTS, ETC., REGULAR TUBES.

1997 1 1997 1

Outside Diameter.	Length.	Thickness Stub's Wire Gauge.	Wght. per Running Ft., Brass Tubes,	Wght. per Running Ft., Cop. Tubes.
Inch.	Feet.	Inch.	Lbs.	Lbs.
~ 18	IO	18	3/8 3/2	3/8
94	11	17	0-16	9-16
13-16	10	17	5/8	5/8
15-16	/ IA	17	11-16	11-16
15-10	10	16	3/	3/
11/4	No /	16	26	5%
· ill	/15	12 and 14	11/4	134
/134	/ 10	12 " 14	13/8	13/8
(11/2	141/2	IR " 14	11/2	1 6-10
115/8/	/12 /	(18 " 14	15/8	1 7-10
13/4	/13 /	12 14	13/4	1 8-10
1 13-16	/ 13 /	12 " 14	1 13-16	1 9-10
1%	12/	12 " 14	17/8	1 15-16
1 15-16	12	12 14	2	2 1-10
2	15	12 14	2 1-5	21/4
21/8	13	12 14	21/4 .	278
21/4	14	12 14	238	21/2
278	13 /	12 4	21/2	2%
21/2	14/	1 13	23/4	3,1/
25/8	12	1 11 11	31/8	31/8
274	10	11 " 13		31/4
	1234	11 " 13	31/4	378
(346)	10	11 " 13	313	23%
338	11	11 " 13	3/8	41/2
336	10	11 " 13	41%	41/4
346	10	11 44 13	414	43%
-	10	11 " 13	_ 5	51/4
41/4	no	11 19	5	61/2
5	10	10 " 12	6	8
6	/ 10	10 " 12	N9	10
Specific	Outside T	Diameter, and,	sif to be	Annealed,
		hole Length.		engths and
Gauges ma			Jour Ty	Suis wild
Sunges ma	ac to orde	. 1 /		

Made to Correspond with IRON TUBES, and to fit IRON TUBE FITTINGS.

Outside	Same as Iron	Length.	Weight per
Diameter.	Pipe Sizes.		Running Foot
3/3 in. 9-1/6 '' 11-1/6 '' 13-1/6 '' 1 5-1/6 '' 1 9-1/6 '' 2 5-1/6 '' 2 13-1/6 '' 2 13-1/6 '' 3 1/2 ''	15. in. in. in. in. in. in. in. in. in. in	17 feet. 17 ''' 17 ''' 11 ''' 11 ''' 11 ''' 11 ''' 10 '''	1/4 lb. 7-16 " 5/5 " 8-10 " 1/4 " 1 7-10 " 21/4 " 21/4 " 31/2 " 41/4 "

For less than five hundred pounds of one size, three cents per pound extra.

Three cents per pound added for cutting in short lengths.

SEAMLESS BRAWN COPPER TUBES,

FOR COPPERSMITHS.

From 18 Stub's Gauge upward, and any required length. Sizes and Weights of No. 18 Wire Gauge:

Inside	Weight per	Inside	Weight per
Diameter.	Foot.	Diameter.	Foot.
½ in. 56 " 34 " 78 " 11/6 " 11/4 "	.32 lb. .43 " .55 " .65 " .75 " .85 " .95 "	15% in. 134 " 178 " 274 " 224 " 234 " 235 "	1.15 lb. 1.20 " 1.30 " 1.40 " 1.50 " 1.60 " 1.70 "

Brass, 5 cents per pound less than copper.

SEAMLESS DRAWN BRASS TUBES, FOR PLUMBERS.

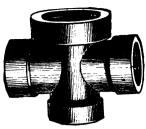
Outside Diameter, 3/8	3/	7/4	1	11/	11/6 80
Plain, per Foot\$0 25	30	45	60	70	
Tinned, " 30	35	50	70	8 o	90

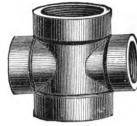
FITTINGS FOR WROUGHT IRON PIPE.

ELBOWS.









CROSSES.

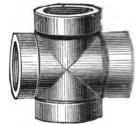


Fig. 326.—PLAIN. Fig. 327.—REDUCING. Fig. 328.—BACK OUTLET.

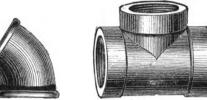
Fig. 329.

TEES.

Fig. 331.—PLAIN. Fig. 330.

45° ELBOWS.









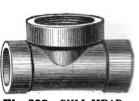


Fig. 332.—CAST.

Fig. 333.-MALL.

Fig. 334.-PLAIN.

Fig. 335.—REDUCING.

Fig. 336.—REDUCING.

Fig. 337.—BULL-HEAD.

CAPS.

RETURN BENDS.













Fig. 338.—CLOSE.

UNIONS.

Fig. 339.—OPEN.

Fig. 340.-BACK OUTLET. Fig. 341.-SIDE OUTLET.

LONG SCREW.

Y OR LATERAL BRANCH.



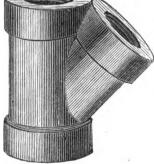








Fig. 344.—COMMON.

Fig. 346.

Fig. 347.

COUPLINGS.





Fig. 345.





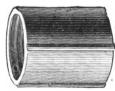






Fig. 349.-WROUGHT.

Fig. 350. CAST IRON REDUCING.

Fig. 351. Fig. 352. MALLEABLE IRON REDUCING.

Fig. 353.—RIGHT AND LEFT. WITH SQUARES.

Fig. 355.-PLAIN.

NIPPLES.

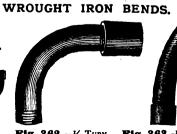








OFFSET.



BUSHINGS.

Fig. 362.-% Turn. Fig. 363.-% Turn.

Fig. 357.-LONG.

52

WROUGHT IRON PIPE FITTINGS.

Size, inch	1/8	×	3/8	1/2	34	1	1 1/4	I 1/2	2	21/2	3	31/2	4	41/2	5	6	7	8
Elbows	8 0 05	6	8	9	12	18	26	36	48	86	1 40	2 00	2 60	3 80	4 50	6 00	9 50	12 00
" 45°				ΙÓ	14	20	30	40	52	90	I 45	2 10	2 75	4 00	4 75	6 50	, •	
Tees	6	8	10	13	16	24	35	48	70	I 20	1 85	2 60	3 25	4 50	5 60	7 60	12 00	16 00
Y Branches				_		35	55	75	1 10	2 10	3 00	4 75	5 70		•	•		
Cross				18	24	35	45	70	90	1 6o	2 50	3 75	5 00	6 00	7 00	10 00	15 00	20 00
Return Bends, Close				15	20	30	45	56	go	1 6o	2 25	3 50	4 50		-		•	
" " Open				16	24	35	50	70	1 10	I 75	2 50	3 75						
Plugs		4	5	6	7	8	11	15	24	40	55	75	1 00	I 25	I 50	1 90	3 00	4 50
Reducing Couplings			8	10	12	16	20	30	45	75	1 25	I 75	2 25	_	_	•	-	
Couplings	5	6	7	8	13	14	19	22	38	70	1 00	I 40	I 50	2 00	2 50	3 60		
Bushings			7	8	10	12	15	20	30	45	70	1 00	1 30	I 85	2 10	3 00	4 00	5 00
Lock Nuts		4	5	6	7	8	12	16	22	35	50	65	90	1 10	I 40	2 00	•	-
Nipples, Shoulder or Close	4	4	5	6	8	10	14	18	30	50	75	1 00	I 50	2 00	2 60	3 70	5 60	8 00
" Long (6 to 12 inch)	ż	8	g	10	13	15	20	30	40	70	1 00	I 40	1 90	2 50	3 20	5 00	•	
Long Screw	23	28	31	43	60	70	1 00	I 20	1 6o	2 70	3 50	4 90	6 óo	7 00	•	•		
Wrought Iron Bends	•		•	28	37	56	77	I 12	1 65	•				•				
Caps		5	6	7	8	10	15	20	30	50	8o	I 25	1 8o	3 00	3 75	4 50		
Unions		16	22	28	36	46	64	80	I 20	2 10		-3			5 75			

GALVANIZED IRON FITTINGS.

Size, inch	3∕8	1/2	34	I	11/4	1 1/2	2	21/2	3	31/2	4	5	6
Elbows	\$ 0 10	14	18	26	36	52	8o	1 8o	2 50	4 00	5 00	8 00	11 75
Tees	14	18	24	35	55	75 ·	I 20	2 20	3 40	5 60	6 40	9 25	14 50
Nipples	10	12	16	22	30	40	60	90	1 30	2 00	2 60		
Couplings	8	10	15	20	25	32	50	1 00	1 6o	.2 40	3 00	3 25	5 00
Caps and Plugs	8	9	10	15	22	30	45	80	I 25	I 75	2 50		

For prices of Reducing Elbows, Tees, etc., take size of largest opening.

Prices of other Fittings, illustrated but not specified, furnished to order only.



Fig. 364.

FLANGE UNIONS.

DAME'S IMPROVED FLANGE UNION.

Every Flange is packed with a rubber gasket, saving time and expense in pack-

The gasket or packing, being held in the recess, can not be blown out by

The packing is entirely protected from the weather.

Size, inch I	11/4	1 1/2	2	2 1/2	3	31/2	• 4
Each \$1 65	1 8o	1 90	2 IO	2 50	3 00	3 75	4 50

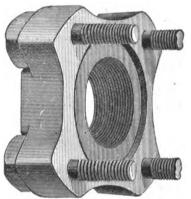
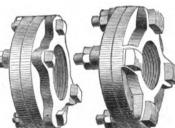


Fig. 365.



FLANGE UNIONS WITH BOLTS AND

Size, in. 1 | 1½ | 1½ 2 2½ 3 3½ 4 | 4½ 5 | 6 | 7 | 8 Each, \$1 15 | 1 25 | 1 45 | 1 70 2 00 2 40 3 00 3 70 4 75 | 5 60 7 00 | 11 00 | 15 00

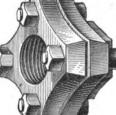




Fig. 366.—Common. Fig. 367.—New Style. Si

			FL	AN	GE
C	1-				

S. Fig. 1368.-Square. Fig. 369.—Malleable Iron



Fig. 370.—Curved.



Fig. 371.-Oval.



Fig. 372.-Blank.

the of Divi	14	1/	3/		1.1/	- 1/	2	21/		21/		41/5
Size of Pipe.	⅓8	1/2	*	1	1/4	1/2	-	2 1/2	3	31/2	4	4735
3 inch	\$ 0 15	18					•					
3½ "	18	20	23.									
4 "	20	22	24	26	30							
4½ "	26	28	30	32	36							
5 "	32	35	36	38	44	48						
5½ "	38	40	43	46	50	55	60					
6 "	45	48	52	55	58	62	66	75				
6½ "		60	65	68	72	75	80	85				
7 "			76	8o	83	86	88	94	1 00			
7½ "			88	90	92	95	98	1 05	I 12			
8´- "				1 05	I 07	1 10	I 13	J 20	1 22	I 32	I 42	
81/2 "				•	1 25	I 27	1 30	I 35	I 40	1 48	1 57	
9 "	-5	6	7	8	1 40	I 43	1 48	I 52	I 58	1 65	I 75	
9½ "	•		•		1	1 60	1 63	1 70	1 75	1 82	1 00	
10 "	2 40	2 60				•	1 8o	1 90	1 95	2 00	2 Í0	2 30
·	3 00	3 20			ł		2 10	2 20	2 30	2 40	2 55	2 75
12 "	3 50	3 75	4 25		1		2 50	2 65	2 75	2 Šo	3 00	3 30
13 "	4 00	4 20	4 90	5 75	ı		•	•			3 75	3 90
14 "	4 60	4 75	5 50	6 50	1						4 30	4 55
Curved Flanges 25 per ce	•			-	ices for	the sa	me siz	e.			. •	



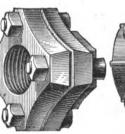




Fig. 373.-Common.



ROUGH BRASS FITTINGS. IRON PIPE SIZES. 1/8 1 11/4 11/2 21/2 Size, inches..... 1/4 3/8 1/2 34 Elbows.....\$0 12 16 80 1 20 1 75 2 75 4 50 75 1 10 1 60 2 60 4 00 6 75 Tees..... 16 20 15 40 70 1 00 1 50 2 00 3 25 6 00 8 50 Crosses..... 20 22 25 Return Bends, open pat-50 70 1 00 1 50 2 00 3 25 6 00 8 50 tern..... Nipples, short..... Nipples, long, not over 30 35 40 50 65 75 1 00 2 25 3 60 Mir. 377. Fig. 375. Fig. 376. SOLDERING UNION. SOLDERING NIPPLE. SOLDERING NIPPLE. FEMALE 6 inches 60 70 1 00 1 30 1 70 3 25 5 25 SOLDERING UNIONS. 35 55 75 I 25 I 70 2 80 60 80 I 00 I 50 2 01 3 25 15 25 40 60 80 I 00 10 12 15 20 26 15 20 25 35 45 5 6 8 12 Plugs or Caps..... Size, inch., / 1/ ½ ¾ I I¼ 11/4 Couplings or Reducers... Lock Nuts.... Per dozen, \$2 30 /3+50 600 800 1100 1600 2400 33 00 42 a SOLDBRING NIPPLES. FINISHED BRASS UNIONS. Size, inch, 1 1/2 21/2 11/4 Size, inches.. 1/2 3/8 65 6 50 8 00 15 00 24 00 36 u 2 50 400 00 4 25 6 50 Per dozen, \$1 50 200 5 00 Price, each. \$0 40 50 85 1 50 1 90 2/30 1 15 EXPANSION JOINTS. Fig. 380.-FLANGED 21/2 Size, inches. 4 3 50 50 16 bo 24 00 5**Þ** 8 00 22 00 75 3 30 14 50 12 00 18 00 Fig. 379, Iron.... **96 ∝** Fig. 380, "Flanged.... 20 00 28 QO 46 00 PLAIN COUPLING. WROUGHT IRON FERRULE Size, inches... 11/4 11/2 Price......\$0 20 20 20 20 25 30 Size inches 3 31/4 Price ... \$0 40 45 5 80 I 10 80 Fig. 382. GAS PIPE HOOKS Size, inches 58 34 I 114 11/2 134 2 7 9 II 15 2I 27 30 9 II 13 18 25 30 36 3% 3/2 11/4 Size, inches..... 1 11/4 11/2 13/4 2 21/2 Per thousand....\$7 50 7 50 8 00 10 50 Finished.....per doz., \$4 51 22 50 27 50 " Ground Face, " Plumbers' Hooks for Lead Pipe. PATENT PIPE LEAK STOPPERS. Leader Hooks PIPE STRAPS Malleable Iron Tinned. sizes from 1/2 to 1 inch, per lb.......\$0 20 Fig. 385. All SHEET IRON TINNED. Size of Pipe, inches..... 34 75 Fig. 386. All Sizes from 1/4 to 2 inches, per lb......\$0 25 80 1 20 1 50

Fig. 387.

GAS COCK WRENCHES.

8 sizes, to fit Gas Cocks, 1/2 inch to 2 inches. Per lb., 12 cents. COPELAND'S PATENT STEAM BOILER-TUBE PLUG. FERRULE, AND REDUCER.

75 cents per inch.



CHANDELIER HOOKS.

¾ and ¼ inch., per lb......\$0 14



21/

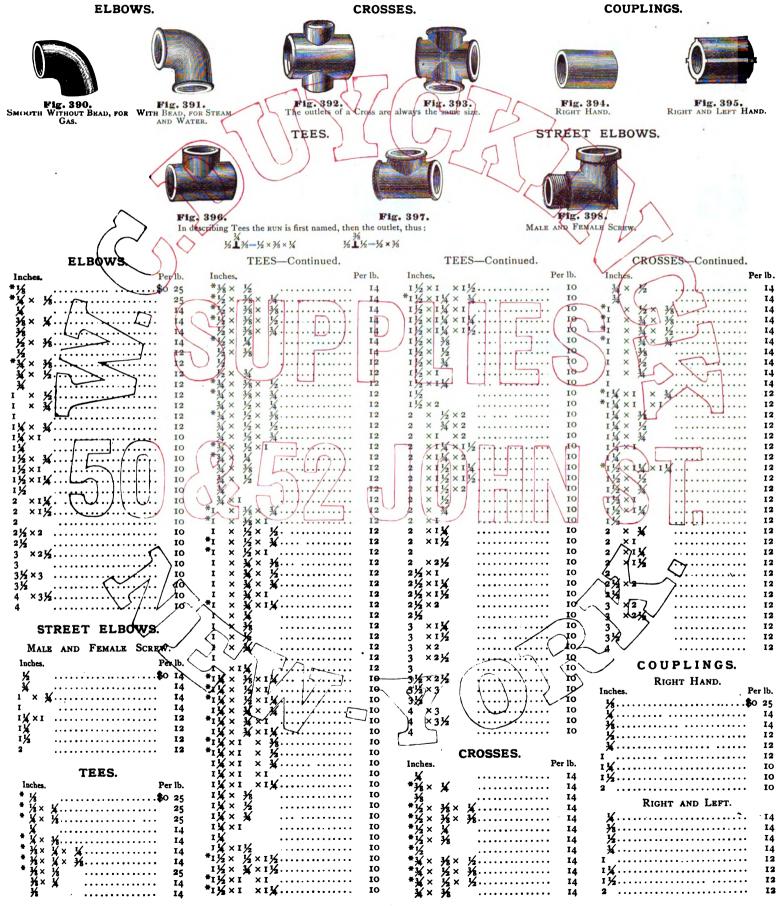
35

6

MALLEABLE IRON FITTINGS.

NOTE.—All sizes 2 inches and under furnished plain for Gas, and beaded for Steam, except those marked *, which are plain only.

All sizes above 2 inches have bead or band. In ordering be particular to mention whether for Gas or Steam.



MALLEABLE IRON FITTINGS—Continued.

DROP TEES.

DROP ELBOWS. Flanges Right and Left.











Fig. 399.—FEMALE.

Fig. 400.—Male and Female.

Fig. 402.-Flange Right Side. Fig. 403.-With Long Outlet Piece.

DROP ELBOWS.



Fig. 404 .- FEMALE.



Fig. 405 .- MALE AND FEMALE.

ELBOWS.



Fig. 406.-WITH SIDE OUTLET.

RETURN BENDS.



Fig. 407.—OPEN PATTERN.



Fig. 408.—CLOSE PATTERN.

WASTENUTS.

EXTENSION PIECES.

PLUGS.

CAPS.

REDUCING COUPLINGS.

LOCKNUTS.



Fig. 409.-TINNED.

Inches.

Fig. 410.-Male and Female.





Inches.



Per lb.

19



DROP TEES.

FEMALE.

3/8 × 1/4 × 1/4 · · · · · · · · \$0 14

3/8 × 3/8 × 1/4 14 3/8 × 3/8 × 3/8..... 1/2 × 1/4 × 1/2 ½× ¾×¼.... 1/2 × 3/8 × 3/8 ····· ½× ½×¼..... ½× ½×¾..... 34 × ½×¼..... 34 × ½ × 3/8.....

34 × 34 × 3/8..... 34 × 34 × ½..... ** ****.....

I × 3/4 × 3/8.....

1. ×1 ×3/8...... 1 ×1 ×½.....

MALE AND FEMALE.

¼× ¼×¾..... 3/8 × 1/4 × 3/8..... 3/8 × 2/8 × 3/8..... ½ × ¾ × ¾

½× ½×¾..... 34 × ½×3/8 P × 34 × 3/8..... 1 ×1 ×3/8.....

14

14

14

DROP ELBOWS. (Figs. 401, 402, and 403.)

(1 .Bs. 401, 402, and 403.)	
Inches, Po	r lb.
Inches. Pe $\frac{1}{4} \times \frac{3}{8}$ \$0	14
3/8 × 3/8	14
(Fig. 404.)	
¼×¼	14
3/8 × 1/4 · · · · · · · · · · · · · · · · · · ·	14
3/8 × 3/8	14
1/2 × 1/2	
¾×¾	14
(Fig. 405.)	
1/8 × 3/8	14
¼×3/8	14
3/8 × 3/8	14
½ × ¾	

EL	.BO	N S	WITH	SIDE
-		ΟU	TLET.	
hes.				Per
íχ	3/4 ×	¥		s o

¾× ¾× ¼ \$0 I ½× ½× ¾ I ½× ½× ½ I ¾× ¾× ¾ I I × I × I I RETURN BENDS. All Sizes. ½ to 2½ inches.	Inches.	Per	
½×½×½	3/8 × 3/8 × 1/4 · · · · · · · · · · · · · · · · · · ·	\$ 0	14
X×X×X	½× ½× ¾		14
RETURN BENDS.	1/2 × 1/2 × 1/2 · · · · · · · · · · · · · · · · · · ·		14
RETURN BENDS.	¾× ¼× ¾		14
	ı xı xı	•	14
	DD#1131 D		
All Sizes. 1/4 to 21/4 inches	RETURN BENDS.		
inclusive, per lb	All Sizes, ½ to 2½ inches		_

WASTENUTS. TINNED.

¼.... \$0 19

1/2	19
34	
ı	I
EXTENSION PI	ECES.
MALE AND FEM	ALE.
nches. 8 × 3/8	
PLUGS.	Per lb
*	
3/2	I
1/2	I4
¥	
I	I
r 🌠	
1½	
2	

				C	:	A	.1	P	S	.					
Inches.														Pe	r lb.
*														.\$ 0	14
3∕8⋅⋅															14
1/2															14
34															14
ı															14
11/4															12
11/2															12

2½.....

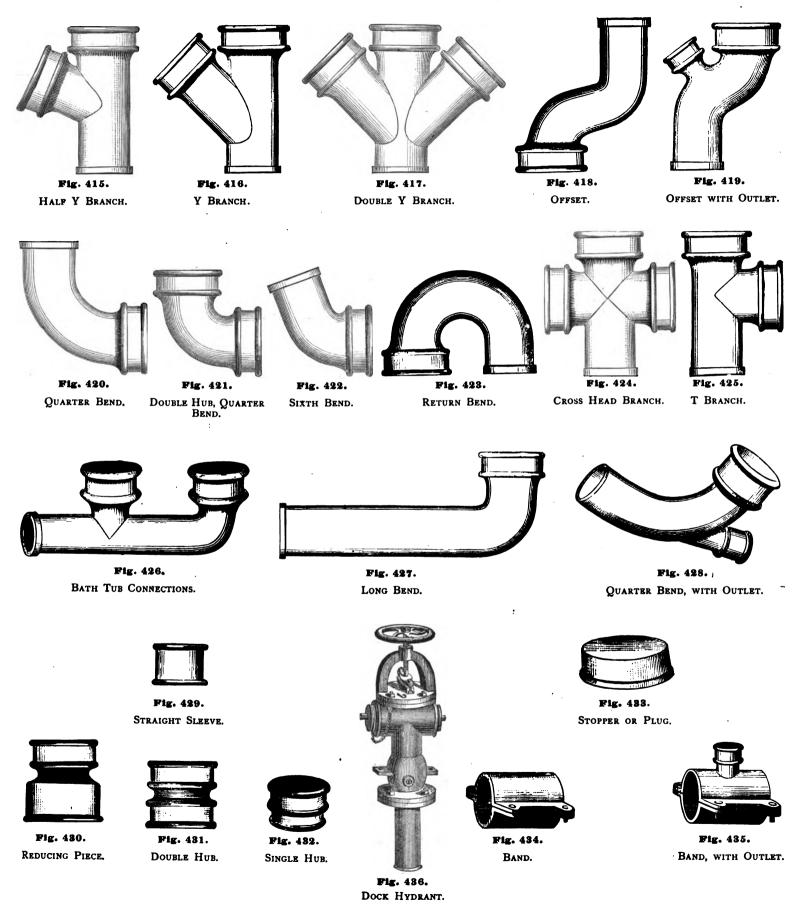
REDUCING COUPLINGS. Inches. ½ × ½..... 3/8 × 1/8...... 25

		LOCKNUTS.	
3	× 2 1/2		1
			1
2 1/2	× 2		1
21/2	×11/2	·	
2	× 1 1/2		1
2	× 1 ¼	· · · · · · · · · · · · · · · · · · ·	
2	ΧI		
I 1/2	×11/4	·	
1 1/2	×ι		
11/2	× ¾	•	
11/4	×τ		
11/4	× ¾	*******	
1 ¼	× 1/2		
I			
I	× 1/2		
ı^	× 3/4		
34	′x 1/8	•••••	
34	' x 3%		
1/2	74 2 3/6		
1/2) ^ /4 V I/		
3.4	· 1/	•••	

	LOCKNUTS.		
Inches.		Per	
₹ 38			14
1/2			14
¾			14
I			14
11/4			[2
11/2			12
2	• • • • • • • • • • • • • • • • • • • •		12

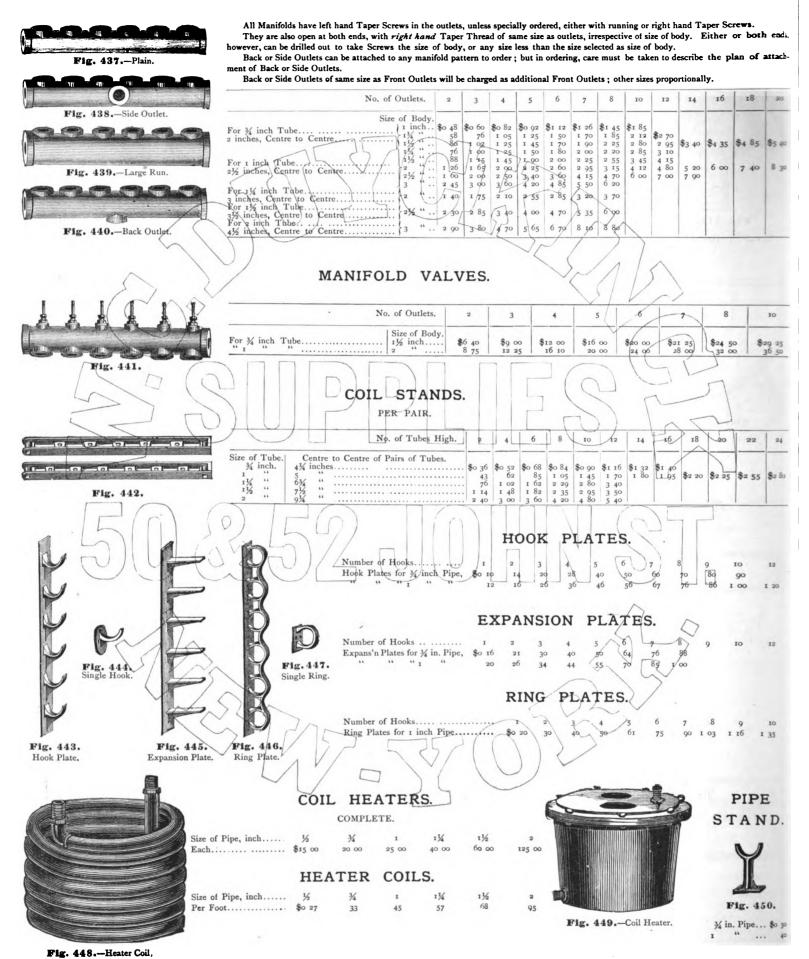
FITTINGS FOR CAST IRON PIPE.

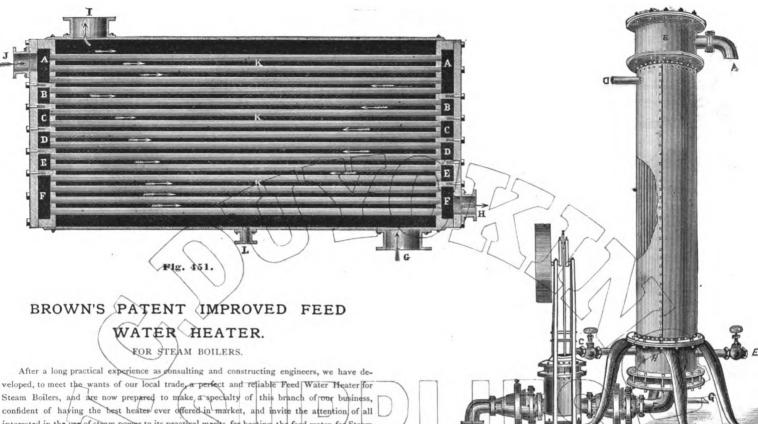
SIZES AND PRICES ON APPLICATION.



Digitized by Google

MANIFOLDS.





veloped, to meet the wants of our local trade, a perfect and reliable Feed Water Heater for Steam Boilers, and are now prepared to make a specialty of this branch of our business, interested in the use of steam power to its practical merits for heating the feed water for Steam Boilers; also for heating water for print works, dye works, bleacheries, woolen mills, and by exhaust steam from engine.

Fig. 451 is a sectional view of heater, showing the construction of the chambers, A, B, C, D, E, F, which return the water into the tubes, through which the water passes back and forth, as indicated by the arrows placed on top of the tubes; the exhaust steam from the engine being connected at G, fills the cylinder and surrounds the tubes K. Being exhausted at I, the eed water from the pump enters at I, and passing back and forth through the tubes K, is discharged at H. The condensed steam falling to the lower side of cylinder, is conducted to hot well by a pipe attached at L. The subes are deflected from a straight line half their diameter, as shown at N; the object of this deflection is to prevent any undue strain that might be caused by the expansion and contraction of the said tubes from the unequal temperatures, from loosening or in any way affecting the tubes when expanded into the cast fron heads.

Н

orse Power.	Diameter, in.	Length of Tubes.	Number of Tubes.	Price.
20	i6	² feet.	29	\$150 00
30	16	<i>≥</i> ⁄⁄ ₉ "	29	175 00
40	16 ~	3/2	29	235 00
50	16	S/ 432 ">	29	275 00
60	16	51/2"	29	300 00
70	20	3½ // <	51	350 00
8o	20	~~~	51	400 00
90	20	41/2	> 51/	45p 00
100	20	5 "	51	/ 500 00
150	24	4 "	72/	600 00
200	24	51/2 "	72	725 00
300	24	8 "	72	900 00

HODGINS' LIME EXTRACTOR AND CONDENSING HEATER.

(Fig. 452.)

The principle of this Improved Condensing Heater is the tendency of heat, under all circumstances, to rise; the top of the apparatus will always be the hottest point, at which place the feed water leaves on its passage to the boiler. It comes in at the bottom cold, at C, absorbs

the heat there, and, as it is pumped up, continues to absorb the increasing heat, till it arrives at the outlet pipe D, where its temperature is equal to that of the exhaust steam. Now, when water is raised to such a high degree of temperature, it has expanded or lost the specific gravity at which it holds neastly all fereign matters in solution at will have been depositing them all the way up, as the temperature increases, and by the time it has arrived at the top, there will be little or no imparity remaining; the only foreign matters which can then be held in solution oeing the very finest particles of lime and sodium, and these can only be removed by distilla-tion. This deposit is blown off once a day through the pipe E, and requires only a minute's work by the engineer who, by strictly attending to it will keep both the condenser and the boiler clean.

Fig. 452

Showing Air Pump Applied.

We would also particularly call attention to the advantage of using our Heater as a Condenser, by using an Air Pump

When an engine is deficient in power, and suffigient water can be had, the Condensing Heater can be relied on to give at least twenty per gent more power without increased consumption of fuel, and when economy of fuel is an object, from twenty to thirty per cent can readily be gained, as the Heater gives a vacuum of from twenty six to wenty-eight inches, and the temperature to the feed water of from one hundred and sixty to two hundred degrees, according as the exhaust steam is more or less dry.

The working of the Condenser will be restilly understood by referring to the cut.

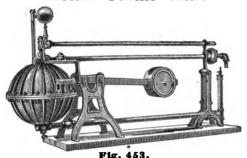
The exhaust steam enters at A, passes to the chamber B, then down through the inside of tubes to condensing chamber H, where it comes in contact with a jet of cold water, that enters at G and is instantly condensed and forms a vacuum. The condensing water, together with the condensed steam, is pumped out through the pipe F by the pump C. The feed water is imped in at F, rises around the tubes until it reaches the outlet pipe D; it has now acquired ature equal to the exhaust steam, and passes to the boiler.

WITHOUT AIR PUMP.

Horse Power.	No. of Tubes,	Price.
10	30	\$175 00
20	50 to 60	275 00
40	90 to 100	385 oo
60	120	560 o o
80	150	560 oo
100	220	775 00

Tubes all five feet long.

ALBANY STEAM TRAP.



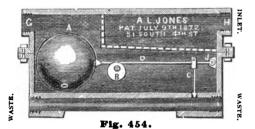
The "Albany Steam Trap" is a mechanical device which is convertibly either a Steam Trap or Boiler Feeder.

As a Steam Trap it returns the water of condensation from the heating coils or pipes to the boiler, whether the same are above or below the water level in boiler.

As a Boiler Feeder it will also supply any deficiency of water to the boiler.

We manufacture two sizes of Traps. The small size (which we style No. 2) holds about five gallons, and is capable of draining and returning to the boiler, automatically, the water of condensation from three thousand five hundred running feet of inch pipe. The price of this size is \$100. The large size (styled No. 1) is of double capacity and power. The price is \$150.

JONES' IMPROVED SELF-REGULATING STEAM TRAP.



CAPACITY FOR ORDINARY HEATING.

No. 1 will answer for fifteen hundred feet of one inch pipe.

No. 2 will answer for three thousand feet of one inch pipe.

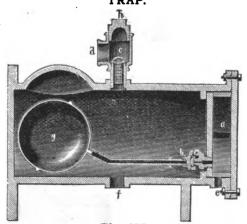
No. 3 will answer for five thousand feet of one inch pipe.

No. 4, for sugar houses and large factories where there is a large condensation, or where a whole building is wasted through one trap, will answer for eight thousand feet of one inch pipe.

Nos. 1 and 2, the inlet and outlet, is one inch standard gas thread; No. 3 is one and a half inch, and No. 4 two inches.

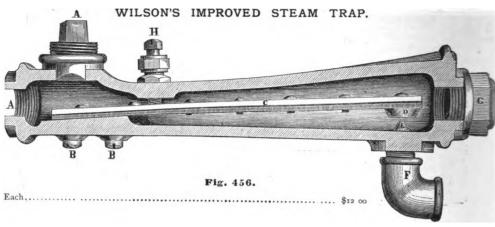
No.	Ι,	each	١.,		 	 	 ٠.	٠.	٠.		٠.	٠.									٠.		٠.	\$ 35	oc	٥
**	2,		٠.		٠.	٠.							į.				٠.							40	oc	,
••	3,	"			 ٠.		 					 ٠.		٠.	 					 		 		60	oc	,
**	4,	**		٠.						٠.		 										 		75	oc)

BROWN'S PATENT IMPROVED STEAM TRAP.

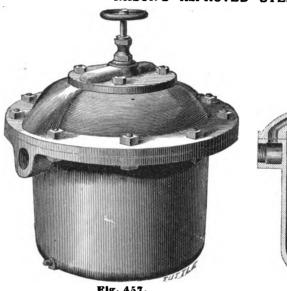


No	1	2	3
Will drain square feet surface		3500	6500
Price	\$25 00	35 00	65 00

STEAM TRAPS.



NASON'S IMPROVED STEAM TRAP.



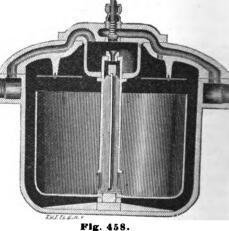
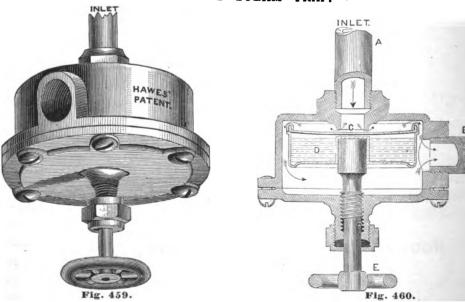


Fig.	457.	

37 40 m		_			
No. of Steam Trap. Size of Pipe Connections, inches. Diameter of Cylinder,	1 ½ 8	3/4 101/2	3 1 12	1½ 14	5 1½ 18
Height to top of Cover, "Greatest number of square feet of surface to which it	8	10	12	14	151/2
should be applied.	350 16 ∞	900 20 00	1400 27 50	2000 35 00	3500 65 ∞

HAWES' STEAM TRAP.



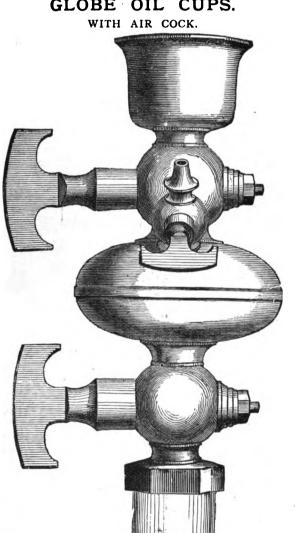
No.	ı—To	Drain	1000	feet	ı inc	h.	Pipe	
	<u></u>		2000 4000		I		***************************************	
**	3—		7000		;		***************************************	
44	<u>-</u>	ч,	,,,,,,,	••	:	**		25 00

OIL CUPS.

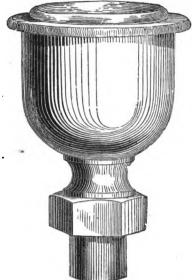
BEST STEAM METAL.



GLOBE OIL CUPS.



Number.	Diameter of Globe.	Screwed for Pipe.	Each, Fig. 464.	With Valves,				
ου	1 5/8	₹	\$3 25	•				
o	1 7/8	1/2	3 50					
1 .	21/8	1/2	4 00					
2	21/2	1/2	4 75					
3	2 7/8	*	5 50	\$ 8 oo				
4	31/4	*	7 25	10 00				
5	3 <i>7</i> /8	*	12 00	16 00				
6	414	1	15 00	20 00				





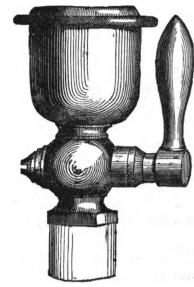
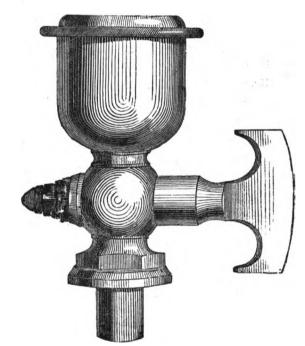


Fig. 463.



PER DOZEN.

Number.	Diameter Top.	Screwed for Pipe.	Plain, Fig. 462.	Tee Handle, Fig. 465.	Lever Handle, Fig. 463.	New Style, Plain Fig. 461.
000	*	1/8	\$3 00			\$ 4 2 5
00	₹8	¼	3 50			
o	I	¼	4 00	\$10 00	\$12 00	5 00
I	1 1/8		5 75	12 00	14 00	6 00
2	1 3/8	3∕8	7 00	15 00	18 00	7 50
3	1 5%	3∕8	9 50	18 00	21 00	
4	1 3/8	1/2	12 50	24 00	27 00	
5	2	1/2	16 00	30 00	33 00	
6	23/8	*	24 00	36 o o	39 00	
7	2 7/8	34	33 00			
8	318	34	42 00			•
	61					

NATHAN & DREYFUS' PATENT SELF-ACTING LUBRICATORS. FOR STEAM CHESTS AND CYLINDERS OF ALL KINDS AND SIZES. PATENT OCTOBER 27, 1863, AND JANUARY 19, 1869. Fig. 469.-WITH YOKE. Fig. 466.-With Glase Indicator. Fig. 468 .- Plain, WITHOUT YOKE RIg. 467.-INTERIOR VIEW. Size, Inches..... 7 21/2 2 3 6 00 8 00 10 00 12 00 16 00 with Glass Indicator. 12 00 20 00 10 00 15 00 With Yoke..... 00 60 00 20 00 SELF-OILERS LOCOMOTIVE CUPS. DESIGN (AS SEEN IN CUT OF No. 42) - PATENTED MARCH 30, 1869. Are Shell-Cased, made very ornamental, constantly exposing the oil to view, and are generally considered the best ever used. Height. Per Dos Capacity Diameter. No. 28-Shell Case, for Small Connections..... 1 1/2 in. 21/4 to \$36 00 36-2 18 00 Eccentrics.....I 31/2 42-2 48 00 Connecting Rods..... 11/4 42-48 00 Guides with Steel Spindle and Spring..... 11/4 Regulators with Valve and Set Screw, to 43-The Rod Cups will run from fifteen to eighteen hundred miles with one filling, and the Guide Cups seven hundred to a thousand miles. We call special attention to our No. 43, NEW LOCOMOTIVE GUIDE CUPS which can also be used on Cross-head of Stationary Engines. No. 42. These Cups have a Regulating Valve which can be set from the outside to feed any required quantity No: 60. of oil, with the most perfect exactness. They can also be filled through a hole in the top without disturb-Nos. 20 to 100, Shell Cased. No. 30 to 150, Skeleton. ing the regulating device, and do not feed except when the engine is in motion. Fig. 470. Fig. 471. ENGINE CUPS-SHELL CASED. Capa Capacity Per Doz. Height. Per Doz. Diameter. Height. in. 11/2 in. \$15 00 in. \$48 00 21/4 " 41/4 " 60 00 24 00 4½ " 21/2 **36 00** 72 00 3½ " 100..... 48 00 240 00 10 ENGINE CUPS-SKELETON. Per Doz. Diameter. Height. No. 30... 1¾ in. 21/2 in. \$10 00 31/2 " 48 00 23/8 " 3¾ " 48 00 33/8 " 54 **0**0 3¾ " 60 00 21/6 4½ " 72 00 84 00 33% 96 00 33/4 51/2 90......14 714 144 00 " 150..... 3 614 " 81/2 240 00 32—Iron Mounted...... 8 41/2 42 00 Crank-pin Cups for Upright Engines to order. 21/2 " 16 00 B, Small..... 34 " 20 00 3 3 B......1½ " 3½ " 24 00

2 7/8 "

3½ "

4½ "

32 00

40 00

C...... 3

D...... 8

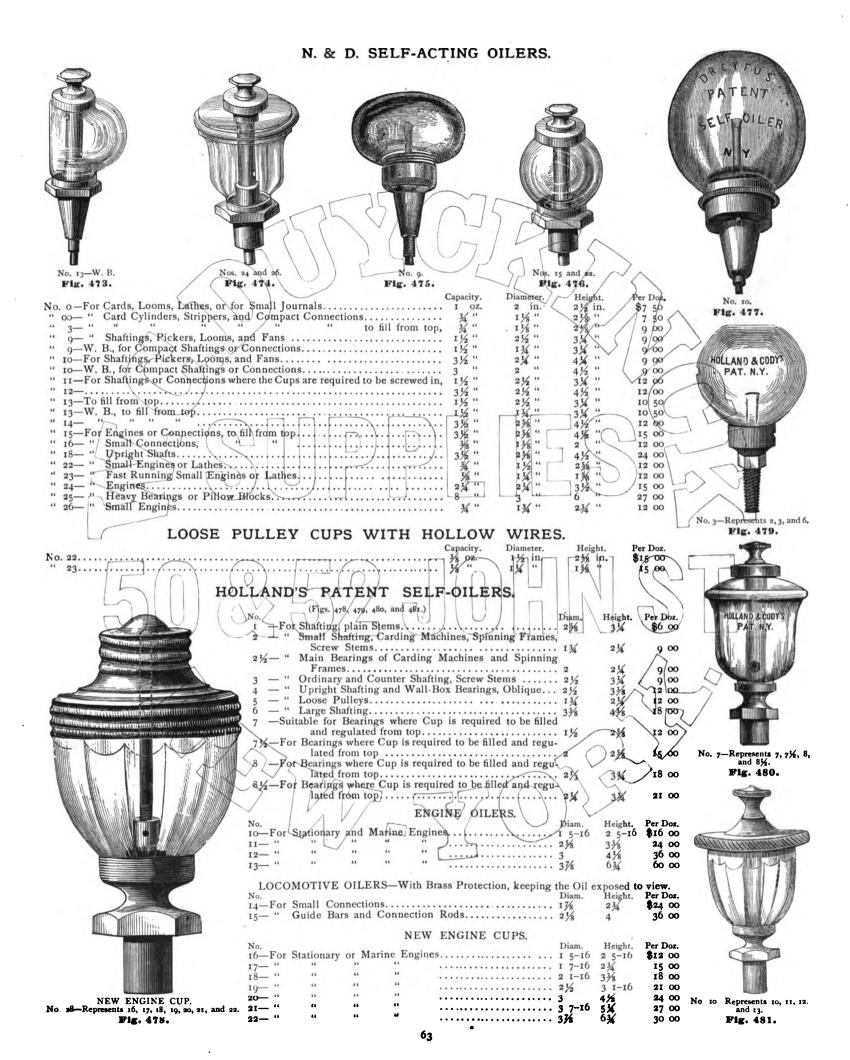




Fig. 482.

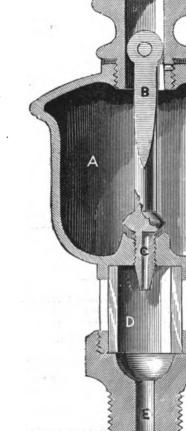
Screwed for Pipe.....

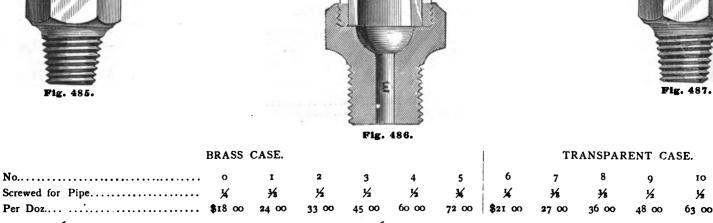
PATENT COMPOUND CUPS.

	•	rer L)oz.
o.	23—Tin, Suitable for Wood Working Machinery	\$8	00
16	24Weight, suitable for Small Shafting	10	00
١.	25— " " Ordinary "	12	00
4	26-Brass, " Loose Pulleys, Spinning Frames, Carding		
	and Wood Working Machinery	8	00
4	27-Brass, suitable for Loose Pulleys, Spinning Frames, Carding and		
	Wood Working Machinery	I 2	00
4	28—Stationary Engines	18	00
•	29— " "	24	00
4	30— "	36	00
4	31—Engine, Spun Top	12	00
4	32— " ."	15	00
•	33— " "	18	00
•	34— " "	21	00
•	35— " "	24	00
•	36— " "	27	00
٠	37-Locomotive, Brass Protection	24	00
4	38— " "	36	00
	•		

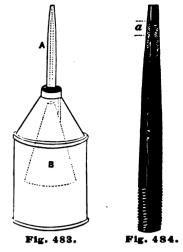
In ordering Cups, send size of hole in journal and depth of caps, with full description, and the purpose for which the machinery is used.

GEE'S PATENT OIL CUPS.





THE THOMPSON OIL CAN.

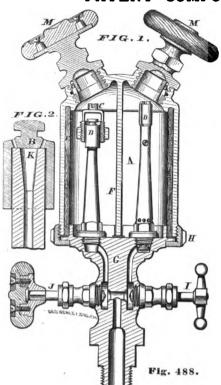


For Orders less than ½ Gross, per dozen	•-	•
	P >	23
For Orders from 1/2 Gross to I		
Gross, per dozen	5	00
For Orders exceeding 1 Gross, per		
dozen	4	75
Tubes without Cans, each		20



10

PATENT COMPOUND LOCOMOTIVE CYLINDER OILER.



A Lubricator that will supply Oil or Tallow to the Steam Chest of a Locomotive whether steam be on or off; and especially to operate when going down grade.

Provision is also made to prevent congealing of the Tallow in very cold weather, by surrounding the oil chamber internally with a non-conducting wall of wood.

by surrounding the oil chamber internally with a non-conducting wall of wood.

By reference to the cut Fig. 1 it will be seen that the oil chamber, A, is divided into two compartments by a central wall or partition, F, cast in one piece with the sides. This form of construction enables it to be used on one side as an ordinary condensing cup, when a full head of steam is turned on, and as a Vacuum Cup on the opposite side, when steam is entirely shut off, as in going down grade. M M are the hinged caps opening into the chambers, B is the valve which regulates the flow of oil in the condensing tube, K, as shown at Fig. 2. C is the nut which regulates the lift of the valve B. D is the nut which governs the fall of the Vacuum Valve in the opposite chamber. E is the wooden partition which lines the sides of the chambers and prevents excessive cold from striking through and congealing the tallow. This is an invaluable feature, and does its work perfectly.

The heat from the steam in the condensing chamber passes through the metal partition, F, and keeps the Vacuum Chamber thoroughly heated up. It is a mood handle to the side screw which operates the throttle valve on the condensing chamber, while I is a brass handle to the valve on the Vacuum Chamber.

DIRECTIONS FOR USING THE COMPOUND LUBRICATOR.

To fill the Chambers either Cap is unscrewed half way, when the handle can be tilted back at right angles on its hinge, exposing a full opening for the admission of tallow or oil, without entirely removing the cap from its place. In closing, the handle is turned to an upright position, the lug, L, springs into the slot, and the whole screwed down as before.

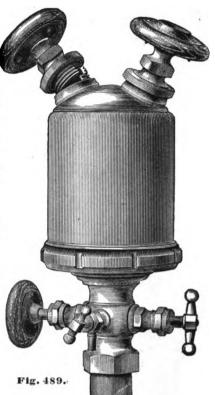
On the condensing side the lift of the Valve, B, and the quantity of oil fed is regulated by screwing the nut, C, up or down in the bridge piece, as shown in cut. The oil feeds through a small opening in the top of the valve-head.

The water of condensation which is formed, floats the lubricant at the proper level until h is all consumed.

Before refilling the Cup, draw off the water and other impurities through vent

To regulate the flow of oil through the Vacuum tube, adjust the nut D by screwing up or down by means of a screw-driver, through the opening at top.

Diameter of Cup	3½	+
Capacity	1½ pt.	
Each\$14 00;	16 00	20 00



PATENT "STAR" LUBRICATOR WITH SAFETY CAP.

Fully a saving of one half the oil used in ordinary Lubricators.

The "STAR" LUBRICATOR is constructed especially for the convenience of Engineers, as the Cap can be unscrewed from the Neck for the purpose of refilling, and yet be retained in place-doing away with the annoyance of dropping or losing the same.

> The Valve is automatic and regular in its action.

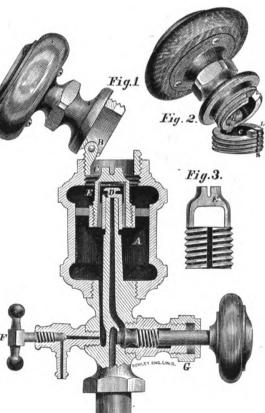
They are the best, the cheapest, and the most economical Lubricators ever invented.

To fill the Chamber, the Cap is unscrewed half way, when the handle can be tilted back at right angles on its hinge, exposing a full opening for the admission of tallow or oil, without entirely removing the Cap from its place. In closing, the handle is returned to an upright position, the lug, L, springs into the slot, and the whole screwed down as be-

The lift of the Valve, D, and the quantity of oil fed is regulated by screwing the nut, E, up or down in the bridge piece as shown in cut. The oil feeds through a small opening in the top of the valve-head.

The water of condensation which is formed, floats the lubricant at the proper level until it is all consumed.

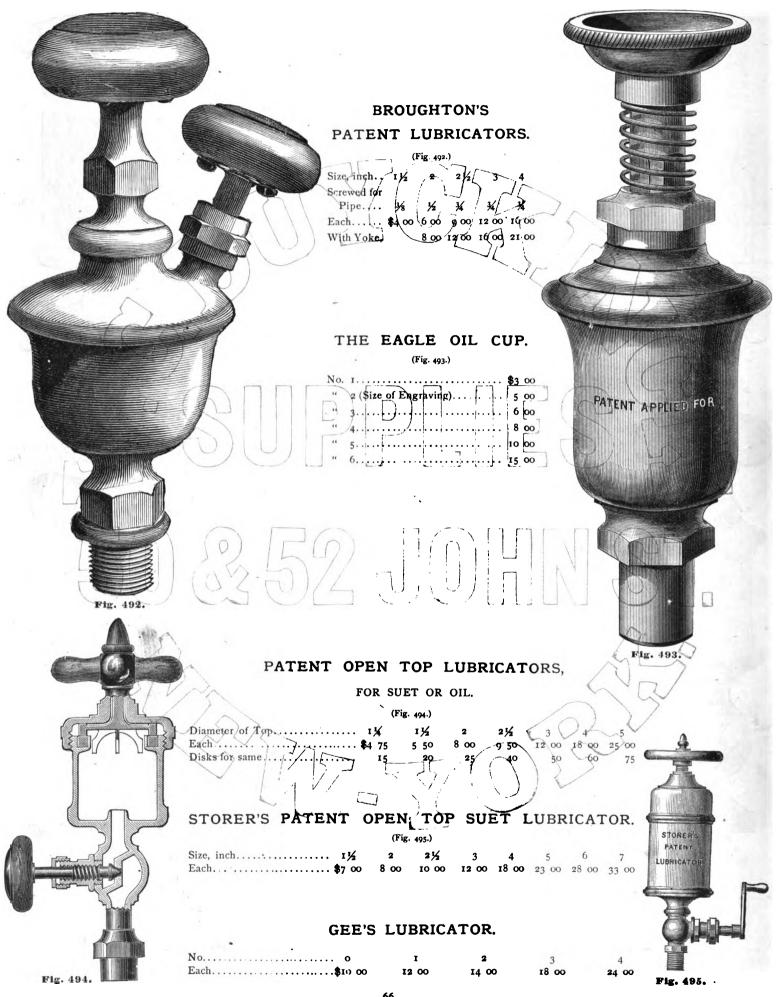
Before refilling the Cup, draw off the water and other impurities through vent cock, F.



COMMON LUBRICATOR. Fig. 490. 3/8 Size, in., 3/8 Each...\$1 75 200 215 240 265 325

BEST STEAM METAL-WITH CONDENSING TUBE, REGULATING NUT, AND SAFETY CAP.-(Fig. 491.)

Size, inches, diameter of Cup	1 1/4	1 1/2	134 34	2 14	2 1/2 3/	3	31/2	4
Capacity	1¾ oz. 5 oo	2 Oz. 6 OO	2½ oz. 7 00	12 pt.	½ pt.	¾ pt. 14 00	1½ pt.	I qt. 24 00
" without Regulating Nut	4 00 3 00	5 00 3 50	6 00 4 00	7 00 5 00	8 50 7 00	10 50	14 00	24 00



SIEBERT'S EUREKA LUBRICATOR.

EXCELSIOR LUBRICATOR.

THE WORKING PRINCIPLE.

When the condensing and discharge pipes are connected with the steam pipe, the pressure in both pipes is equal; but the condensing pipe has a perpendicular height, containing a column of water above the discharge pipe, which is the pressure to force the oil out of the cup.

DESCRIPTION OF THE CUT,

Showing the working of the cut, and the manner of connecting to steam pipe.

- is the condensing pipe.
- The discharge pipe.
 The steam pipe from the boiler.

- E, The oil cup.

 E, The reservoir for condensed water.

 M, Plug through which to refill the cup.

 I, Sliding gauge on the glass tube.

 G, Waste cock to draw off, the water. when the cup is to be refilled.
- L, The valve to admit steam into the
- condensing pipe.

 3, Valves to feed the condensed water
- under the oil.

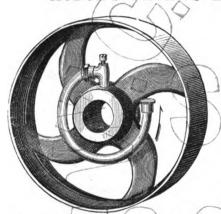
 K. The valve to shut off the supply of oil when the engine is stopped.

 There is also a check valve on pipe B, to prevent steam from entering the cup.

Sizes of Lubricators, and Capacity of Engines for which they are adapted

Size of Cup	12 pint.	pint.	I quart.	1/2 gallon.
Horse Power of Engine	25 or less.	150 or less.	300 or less.	300 or over.
Brass Finished	\$25 00	45 00	55 00	70 00
Nickel Plated	28 00	50 00	60 00	75 00

HODGE'S PATENT LOOSE PULLEY OILER.



Size of Brass Tube, inch.	Inside Diam. of Oiler, inch.	Per dozen.
1/2	2 1/2	\$10 80
1/2	3 .	11 40
1/2	31/2	15 00
1/2	1 4 1 1	12 60
5/8	4/	13 80
5/8	41/2	14 40
58	5	15 00
5/8	51/2	15 60
5/8	. 6	16 20
5/8	7	17 50



Larger sizes to order.

Fig. 497 .- Showing Older ATTACHED TO PURLEY

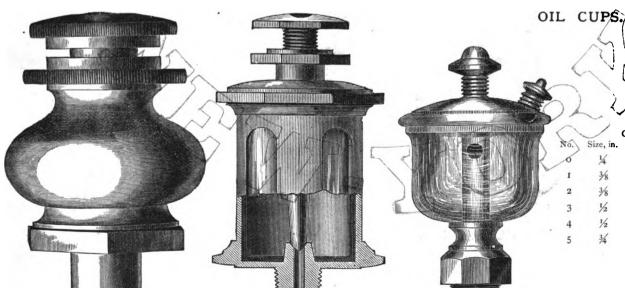
BROUGHTON'S OPEN TOP OIL CUPS.

TRANSPARENT BROUGHTON'S GRADUATING

15 to 20

20 to _40 40 10 80

80 to 100



10.	Size, in.	Contents, oz.	Per doz.	Ex. Glasses, each.
6	1/4	1/2	\$15 00	\$ 0 2 5
1	3/8	1	21 00	25
2	3/8	2	30 00	35
3	1/2	23/4	42 00	50
4	1/2	31/2	54 00	75
5	34	5	66 oo	1 00

"

..... 9 00

..... 10 00

..... 15 00

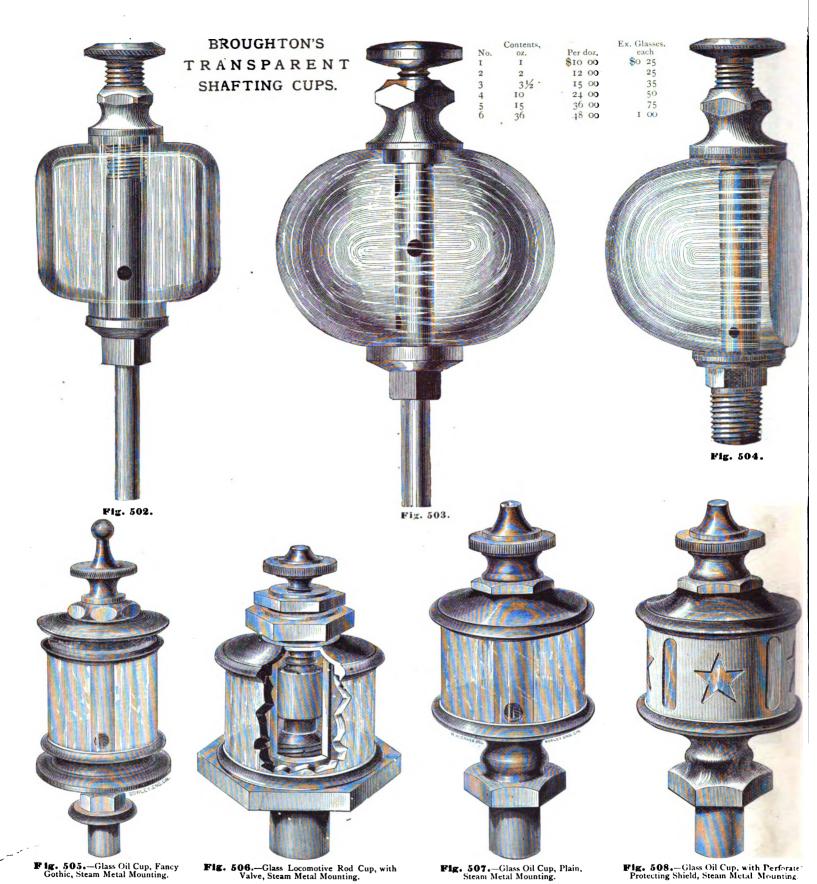
..... 20 00

..... 30 00

Solid Brass, per dozen...... \$30 00 | Glass Reservoir, per doz.... \$36 00

Fig. 501.

67



STAR OIL CUPS.—Glass Cylinders, Steam Metal Mountings.

No. Diameter of Cylinder, inches Size of Shank (Pipe Threads). Glass Oil Cups, Plain (Fig. 507)	0 1 1/8 \$12 00 15 00 12 00 15 00 24 00	1 1/8 1/8 1/8 1/8 00 1/8 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 00 1/8 0	1 ½ 1 ½ 21 00 25 00 21 00 27 00 33 00 33 00 39 00	2 1½ ½ 24 00 30 00 42 00 24 00 30 00 36 00 36 00 45 00	3 1 ½ ½ 30 00 36 00 48 no 30 00 36 00 42 00 40 00 50 00	4 2 1/2 42 00 48 00 60 00 39 00 48 00 54 00	5 21/2 5/2 55 00 63 00 90 00 48 00 63 00 74 00
Extra Glass Cylinders, each, net	6	7	8	9	10	20	30
		68					

PLAIN OIL TANK.



				A D
	Ŀ	ig. 50	9.	
Capacity. Gals.	1	leight.		
Gals.	Diam., in.	in.	Plain.	Japanned ₁
15	14	28	\$ 5 75	\$6 25
	/	-0		'

7 00 S 25 [8 75 9 25 12 00 7 25 7 75 8 25 28 40 201/2 50 80 181/ 45 10 00 22 1/2 45 56 15 00 100 22 1/2 13 00

Fig. 513.

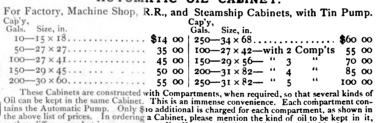
THE PERFECTION OIL TANK.



Fig. 510. Securely packed for Shipping.

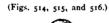
			11	,	
			— Outside	Meas'nt. —	
	No.	Capacity,	Height.	Diameter.	Price.
d,	o	6	16	13	\$ 7 50
•	00	12	20	16	9 00
•	000	25	28	18	14 00
•	I	6o	35	25	20 00
•	2	100	36	301/4	30 00
•	3	150	41	3 6	38 o o
•	4	200	43	40	45 00
,	5	250	43	44	50 00
	EXTRAS. Set	t of Measure	es (4) and	Funnel	\$1 50 g Oilers 1 25
)	Br:	ass Padlock,	and Stop	Cock for fillin	g Oilers I 25

AUTOMATIC OIL CABINET.



These Cabinets are constructed with Compartments, when required, so that several kinds of Oil can be kept in the same Cabinet. This is an immense convenience. Each compartment contains the Automatic Pump. Only \$10 additional is charged for each compartment, as shown in 250 the above list of prices. In ordering a Cabinet, please mention the kind of oil to be kept in it, as they differ somewhat in construction. For Kerosene the bottom is composed of lead.

OIL PUMPS FOR STEAM CHEST.



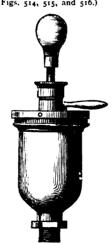


Fig. 515.

CORLIES' OIL PUMP. FOR INJECTING OIL INTO CYLINDERS.

...... 25 00 Each... 2, Large,

NOYES OIL SAVING CABINET TANKS.

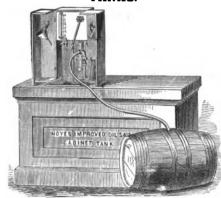


Fig. 511.

150 Gals.... \$60 00 | 400 Gals.... \$90 00 270 " 70 00 | 500 " 110 00 Extra Heavy.



	E	71	į	Z.	•	5	1 :	2	•	
			_			_				

6	Gals		210	ш
2	44		14	00
o	• 6		35	00
o	44		45	00
o	• •	with 2 Compartments	55	00
o	**		50	00
ō	"	with 3 Compartments	75	00
-	**		60	00

An extra Tin Pump is furnished with the larg er sizes of this tank.

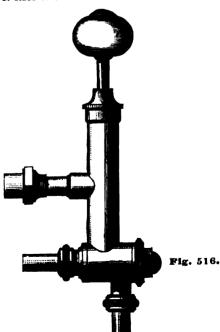
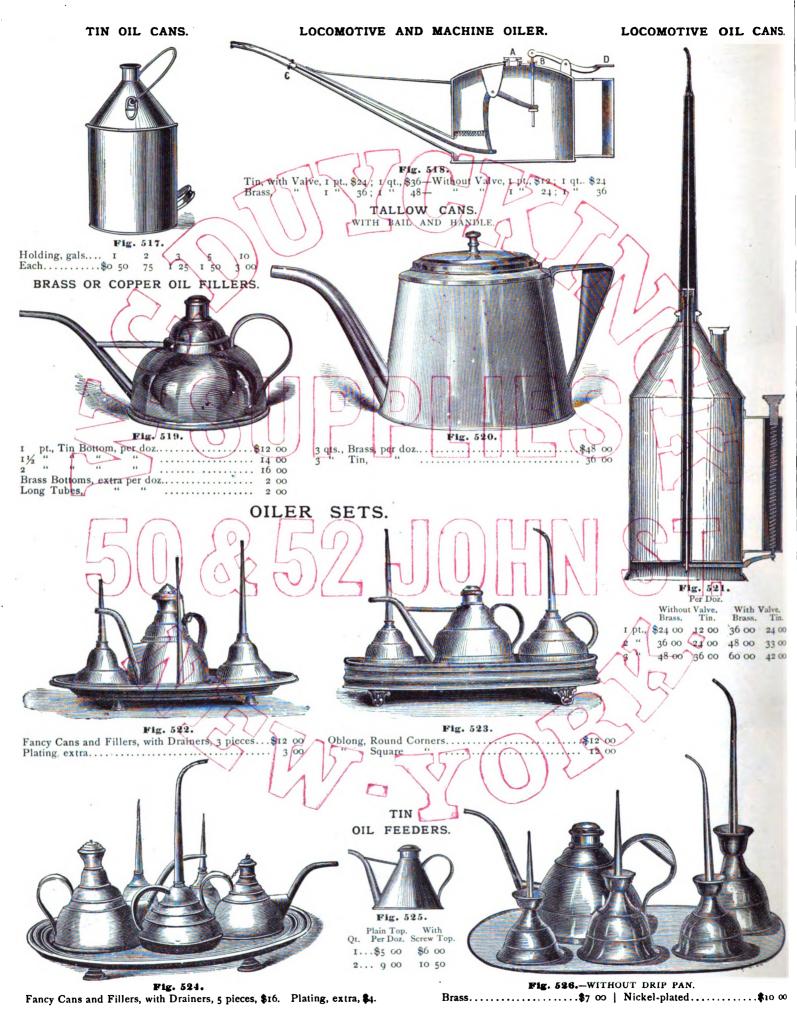
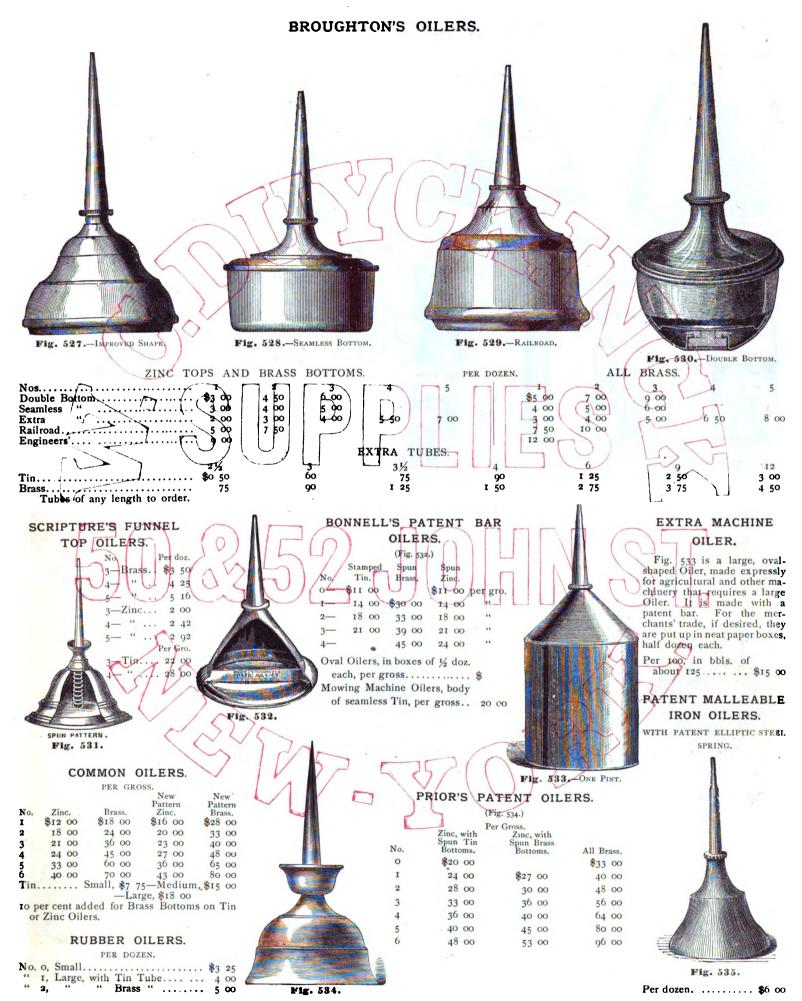


Fig 514.





LAMPS AND LANTERNS.

MALLEABLE IRON LAMPS. dib

BRASS HAND LAMPS.

GALVANIZED IRON LAMPS.





Fig. 537.



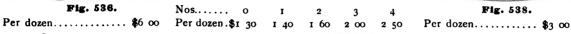




Fig. 539.

Per dozen...... \$3 α.



Fig. 540.

BUNKER LAMPS.

(Figs. 540 and 541.) Per doz., either style, \$3 00



Fig. 541.



(Fig. 543.) Raised Bowl, 2 Tube and Feeder Jacket Lamps, per gross..... \$15 00 Straight Bowl, 2 Tube and Feeder Jacket Lamps, per gross..... Extra, 2 or 3 Tube and Feeder Jacket Lamps, per gross.....

JACKET LAMPS.



TIN LAMP BURNERS.

(Fig. 544.)

Per dozen..... \$0 30 Flat....

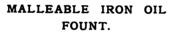


Fig. 544.



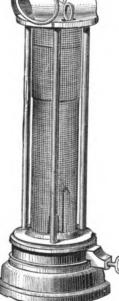
Fig. 542. LOCOMOTIVE TORCHES.

Tin, per dozen.... \$13 00 Brass, " 18 00



(Fig. 545.)

Without Burner or Chimney, per doz..... \$8 50 Burners for same, per doz.. 2 25 Chimneys "



MINERS' LAMPS.

(Figs. 546 and 547.)

DAVY MINERS' SAFETY LAMP.-BEST ENGLISH MAKE

Stephengon's			
Stephenson'seach,	\$7	00	
Best Clanney "	6	25	
Common " "		50	
Fireman's Lamp "	-	00	
Newcastle, Improved Lock	•	00	
D C	-4	w	
Extra Gauzes for Clanney per doz.	6	00	
" " other lamps "	6	50	
Best Quality Gauzeper yard,	1	50	
Glassesper doz.	6	00	
Improved Metallic Brush "	_	00	1
	٠	w	7
Ordinary Hair Brush, for outside "	5	50	ł
DI *	4 -		

Fig. 547.-CLANNEY LAND

Fig. 546.—Newcastle (Improved Lock).

MINERS' CAP LAMPS-TIN.



Fig. 548.







Fig. 550.



Fig. 551.

Per Gross..... \$15 00

Nos. 1, 3, 5, and 7, Small Spouts, for Miners. Nos. 2, 4, 6, and 8, Large Spouts, for Drivers.

15 00

18 00

18 00

12 00

12 00

30 00

30 00













Fig. 556.—Peerless. Radiates Light through Base.



Fig. 557.



(Fig. 552.)	
White Globe, per doz. \$6 Half Green Globe, per doz. 7 Large, per doz. 8 White Globe, 6	> 00 5 00
White Globe,	; ∞
(Fig. 553.) White Globe, per doz\$5	5 00

No. 2, RAILROAD LANTERN.
(Fig. 558.)

All of our Hand Frames are fastened at the top with guard passing over the top rim without solder, which makes it much better than the tin clip.

White Chil





Fig. 559.—Lake and River Lantern. Extra large Oil Cup and Removable Globe.

White Glass, each,...

 White Globe, per doz.
 \$12 00

 Ruby
 20 13

 Green
 17 62

 White Glass, per doz.
 \$18 00

 Colored
 26 00

(Fig. 561.)



Painted, per pair. Brass,







MAST-HEAD FRESNEL. Brass Trimmings. Fig. 563.-CATHEAD FRESNEL-Port and Starboard.



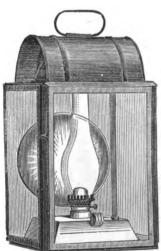
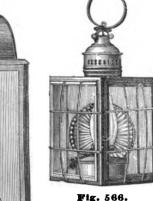


Fig. 565.-STATION.



TRIANGULAR. Per doz.\$16 50



Fig. 567.-SALOON.

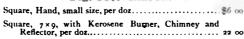
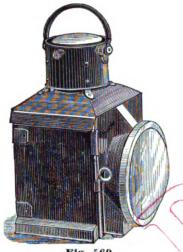




Fig. 568. Brass, with Silver Plated Reflector.....\$7 50



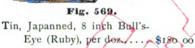
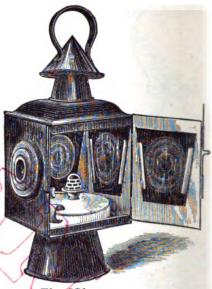


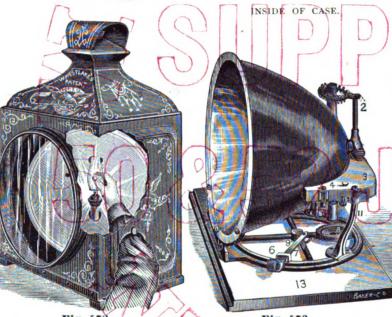


Fig. 570.





PATENT REVOLVING HEAD LIGHT.



Fi	o.	57	2.	

Fig. 573.

No.	I.	23 inch Reflector, with all our improvements, complete\$75	00
		" made of lighter material, and without Pat. Attachments, 60	
"	3.	"Pony," 17 inch Reflector for Narrow Gauge" 60	oc
66	4.	Mill, 17 inch Shallow Reflector. 45	OC
"	5.	17 inch Reflector, Narrow Gauge, all improvements	O

GLASS GLOBES FOR LANTERNS.

White, per do	zen	 1	\$3 00
Blue or Green	per doz		 8 00
Ruby			10 ∞

LOCOMOTIVE HEAD LIGHT CHIMNEYS.

To order, per doz.....

COTTON WICK!

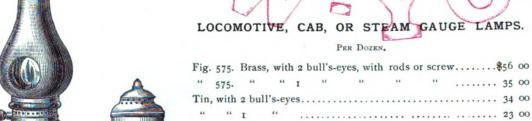
7)	MICKS FOR	HEAD LIGHTS.	
Per gross.		READ EIGHTS.	
		30 (00

LOCOMOTIVE HEAD LIGHTS.

ORDINARY PATTERNS. 16 inch Reflector, each..... 18 "

We make these Head Lights either for Oil, Gas, or Kerosene.

BURNERS FOR HEAD LIGHTS.





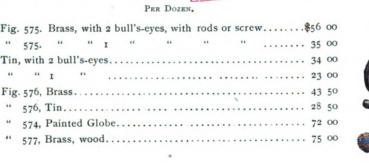
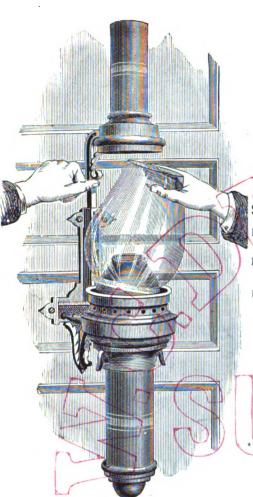


Fig. 576.



Fig. 577.



SIDE CAR LAMP

Bronze and Gilt, for Candle..... \$7 50 Bronze and Gilt, for M. S. Oil..... 9 00 Plated, for M. S. Oil, 12 50 " Candle... 10 50

> FOR NARROW GAUGE AND STREET CARS. Finished in Bronze and Gilt, \$14 00 | Fin. in Silver or Nickel Plate.. \$18 00

> > LOOSE GLOBE CAR LAMP.

CENTRE LAMP.

Fig. 578.-Loose Globe, FOR CANDLE OR OIL.



shown, is firmly held in place, avoiding all danger of breakage. The oil pot is the same as in Centre Lamp No. 583. Very strong and durable; suitable for cars, steamboats, offices, stations, etc., etc. The oil can not drip.

Bronze, per doz.... \$42 00 Finished in Bronze, with Plated Reflector, per doz...... 48 00 Nickel Plate, per

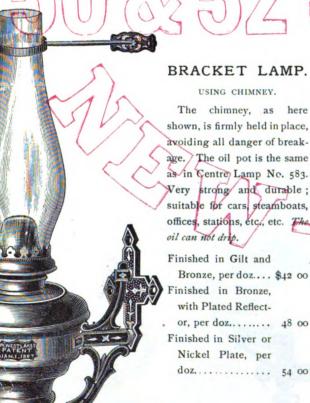
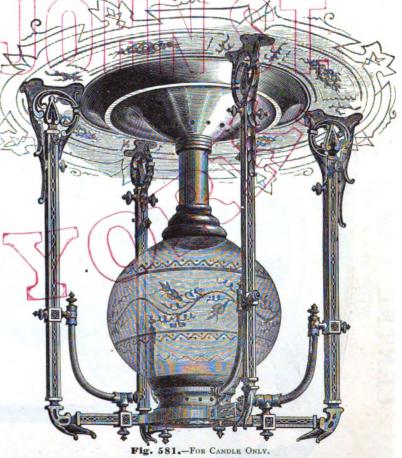


Fig. 580.—Burns Mineral Sperm or Kerosene Oil.



In ordering, state length of arm required.

Bronze and Gilt......\$25 oo | Silver or Nickel\$30 oo

CENTRE CAR LAMP, WITH DEFLECTOR.

Fig. 582.

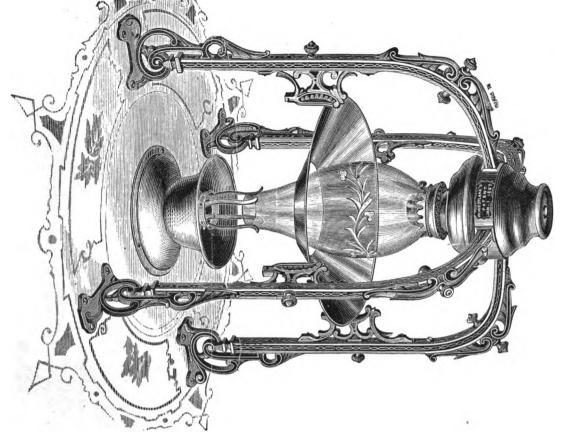
Candle Sockets are made unusually strong. The whole can be readily taken apart for cleaning, etc. The Spiral can be stiffened so as to burn up the entire candle. Each, \$3.50.

up the entire candle. Each, \$3.50.

The Mineral Sperm Oil Pot is made very strong. The flame is regulated by means of an outside ratchet. Each, \$5.50.

CENTRE CAR LAMP,

USING CHIMNEY.



Flg. 583.

BURNS EITHER MINERAL SPERM OR KEROSENE OIL.

Be particular to order arms as long as possible without interfering with bell cord. We make this lamp of suitable sizes for narrow gauge cars and for street cars.

Bronze and Gilt...... \$20 00 | Plated....... \$25 00

We send plated reflectors, unless parcelain are preferred.





Fig. 587 .- ARRANGED FOR Square, per doz\$55 00 With Frame for Post, per doz.

Fig. 590.

..... 90 00



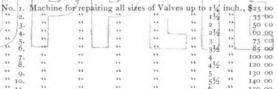
No. 1. With Movable Globe, Patent Cushion Screws, and 25 in. Reflector, each.....\$35 oo

NUTT'S PATENT VALVE REFITTING MACHINE.

(Fig. 590.) This machine is for repairing leaky stop valves, and is the only machine that will repair all kinds of stop valves.

It repairs them without detaching the valves from the

connecting pipes.
I makes old valves as good as new quicker and safer than with emery.





. . . . \$6 50

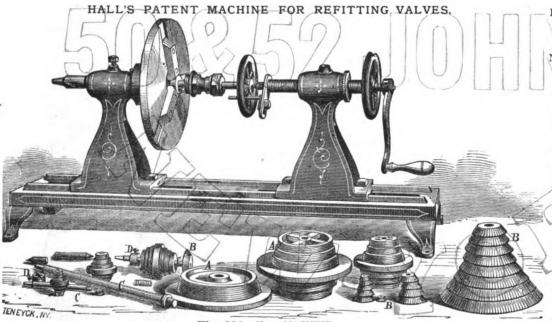


Fig. 591 .- No. 7 MACHINE. By this machine, Valves can be repaired on the Pipes or Boilers without disconnecting, thereby saving

time, labor, and money.

This machine is simple in construction and action, portable, is worked by hand, and being durable, will not require repairing.

Valves can be more accurately repaired with it than with the Lathe or Emery

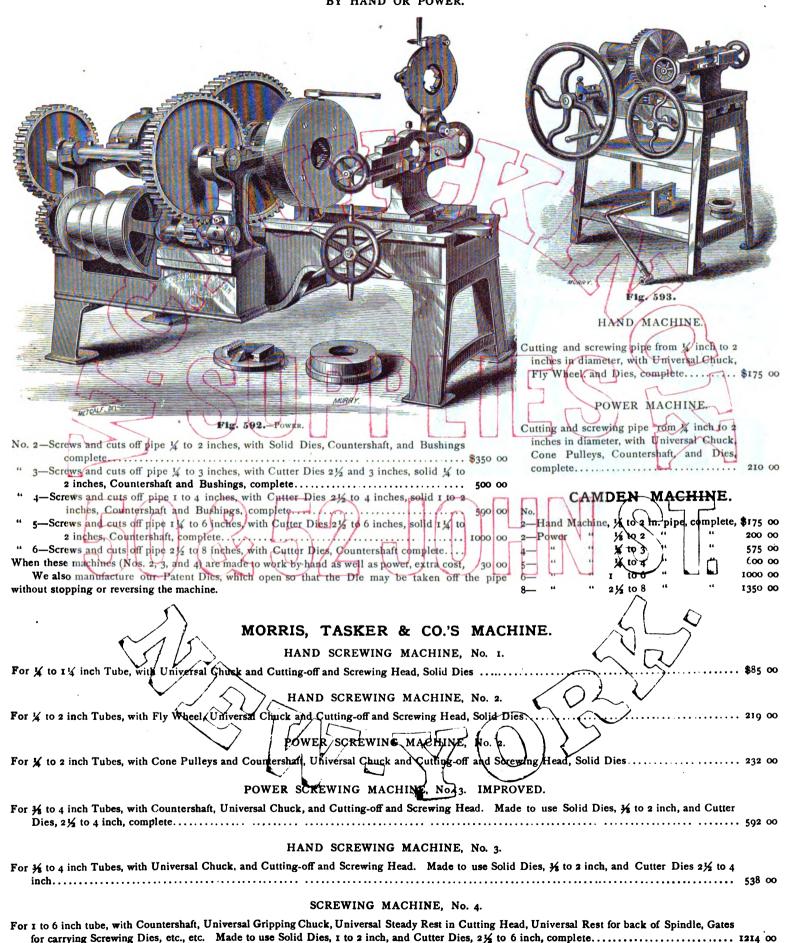
	•	aive	S Can De	more acc	urate	ιy	rep	ane	cu wi	տուտ	ian with the Lathe or Emery.
No.	ı.	7	Cutters,	repairing	from	3/8	to	I	inch	Valve	es\$50 o
"		12	"	"	**	3/8	to	2	**	44	
"	3.	14	"	"	**	3/8	to	2 1/2	44	**	
"	4.	15	"	44	"	3/8	to	3	"	**	130 O
**	5.	16	44	•••	••	36	to	A	**	44	150 o
				66 66	**	3/8	to	5	"	"	
"	7.	20	**		••	3/8	to	6	"		200 0

	1	Con	MPLETE	FOR C)IL —	Style	Fig.	589.	
1	No	. ta.	Post L	amp				\$8 50	
	1.	ża.	41	9).		-		8 50	
	"	3a.	"			1 84		10 50	
	**	4a.	" /					10 00	
	**	5a.	"/	·		>	• • • • •	10 00	
	44	6a.	1		1			12 00	
	"	21a.	N.,	7.	·/···			10 50	
/	u	224.	.,	1			. . . 	10 50	
	1	232.	" ~	"/ ··			.	12 50	
3/	de	24a.	()	"		, ,		12 00	
1	"	25a.	"					12 00	
€,	"	26a.	44	"			· · • • •	14 00	
	"	31a.	Hangin	g Lan	np		· • • ·	10 00	
9	"	32a.	**	**				12 00	
•	"	37a.	**	- "			,	12 00	
	"	38a.	44	"	• •	• • • • •	• • • • •	14 00	
	"	11a.	Bracke	t Lam	· .			8 50	
	**	12a.	"	44	• • • •	• • • •	· • • • •	. 8 50	
	"	13a.	"	**	••		· • • • • •	10 50	

Extra Globes, each, net...... 1 00

" with name glasses, 11 @

IMPROVED MACHINES FOR SCREWING AND CUTTING STEAM AND GAS PIPES, BY HAND OR POWER.



CHASE'S PIPE MACHINE.

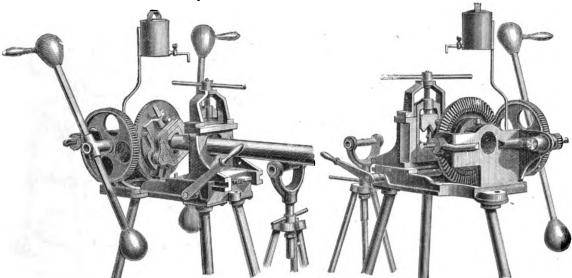


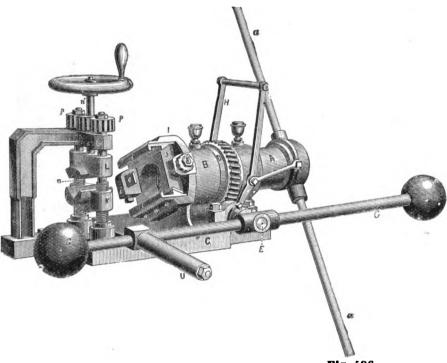
Fig. 594.

Fig. 594 shows the machine as fitted for hand power, motion being transmitted to the several parts by means of gearing, as shown; while on the right is seen the pipe rest and pipe, held stationary by the adjustable jaws of the pipe vise, which passes through the centre of gear, the rotary motion of which is imparted to the die held in the die box.

When cutting pipe, the cutting-off tool has automatic feed, cutting ends of pipe square and smooth.

Fig. 595 shows the reverse of the side shown in Fig. 594.

No. 1. Including a full set of collars for making Nipples.. \$140 00 Dies, from 1/8 to 2 inches, extra, 20 00 No. 2. Including Countershaft and Dies...... \$600 00



EMPIRE PIPE AND BOLT THREADER, PIPE AND BAR CUTTER, AND NUT TAPPING MACHINE.

Hand	Machine,	No.	I	\$ 80	oc
**	**	**	1, with Dies 1/8 to 2 ins., right hand,	95	oc
Power	r "	**	r	110	oc
14	**	"	1, with Dies 1/8 to 2 ins., right hand,	130	oc
Hand	**	• •	2	150	00
**	44	••	2, with Dies ¼ to 3 ins., right hand,	185	90
Power	. "	••	2	165	00
"	"	44	2, with Dies 1/4 to 3 ins., right hand,	200	00

Fig. 596.

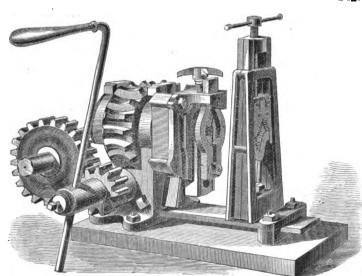


Fig. 597.

SANFORD'S SCREW GEAR PIPE AND THREAD CUTTER.

This machine is for cutting off and threading Pipe 1/4 to 2 in.

Without Dies..... \$50 00

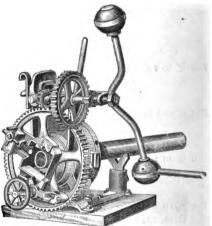


Fig. 598.

ROBERTS' PATENT MACHINE AND VISE.

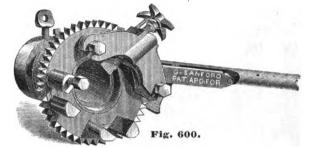
No. 1, threading 1/8 to 2 in..... \$55 oo " 2, " and cutting 1/8 to 2 in. 75 00 Full set of Dies, extra..... 20 00

SAUNDER'S PATENT PIPE AND TUBE CUTTER.'

FOR CUTTING IRON, BRASS, OR COPPER TUBES.

Tube is encircled by Friction Rollers, and all wearing surfaces are made of hardened steel.



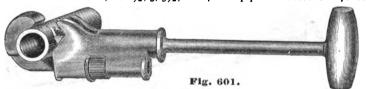


SANFORD'S PATENT RATCHET PIPE CUTTER AND THREADER.

With this machine one person can cut off a Pipe 1 1/4 to 2 inches, or cut a screw on the same, in half the time that two men usually take with the common stock and die.

With the Ratchet and Lever it can be used in many places where the ordinary cutter can not. The Lever can be lengthened, as power may be required, it being in two lengths. The cut-off attachment is self-acting, and can be removed when the dies are used. It has a leading screw to force the die on the pipe. It is adapted to all work, is portable, lighter, less expensive than any thing of the same capacity, and is the most desirable article of the kind in the market.

With Cut-off, to cut from 11/4 to 2 inches, without Dies The usual Square Dies are used for this size.	\$ 25	00
With Dies and Cut-off, for $2\frac{1}{2}$, 3, $3\frac{1}{2}$, and 4 inch pipe	70	00



THE ACME PIPE CUTTER-CAST STEEL.

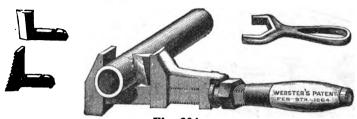
No.	ı—C	uts	1/8	to	1	inch,	eac	h	\$ 7	50	Extra	Kniv	es	\$0.3	ın
**	2	46	34	to	2	44	"		9	oo	44	44		-	
"	3—	"	21/2	to	3	64	"		18	00	**				



Fig. 602.

FOSTER PIPE CUTTERS.

No I Cuts Pipe, inch	2 14 1/2 to 11/2	3 I to 2
Extra Cutters	00 10 00 52 75	12 00
	75	1 00



WEBSTER'S PATENT ORDINARY WRENCH.

12	inch	Wrench,	to cı	ıt off	and	screw up	pipe	1/8	to	-3/4	in. diamete	Per I er. \$ 48)oz, 00
15	**	"	"	46	"	"		1/8	to	11/2	"	60	00
18	**	"	"	"	**	**	**	1/8	to	2	44	72	00
2 I	**	"	"	••	" "	"	"	1/8	to	2 1/2	"		00

EXTRA CUTTERS AND CLASPS.

Size, inch		15	18	21
Per dozen	\$ 6 oo	7 20	8 00	8 50



Fig. 605.

THE PARAGON PIPE CUTTER.

No.	1—0	ut	s 🔏	to	11/4	inch	Pip	е										\$ 7	50
	2— 3—		- 34	to	2 1/5	"	"	• • •		• • •	• • •	• • • •		• • •	• • • •	• • •		9	50
	J		- 74	w	4			• • •	• • • •	• • •	• • •	• • • •	• • • •	• • •	• • • •	• • •	• • • •	18	00

	EXIKA BIIS OR JAWS	
No. 1 \$0 40	No. 2\$0 60	No. 3 \$1 00



PEACE'S PATENT ADJUSTABLE PIPE CUTTER.

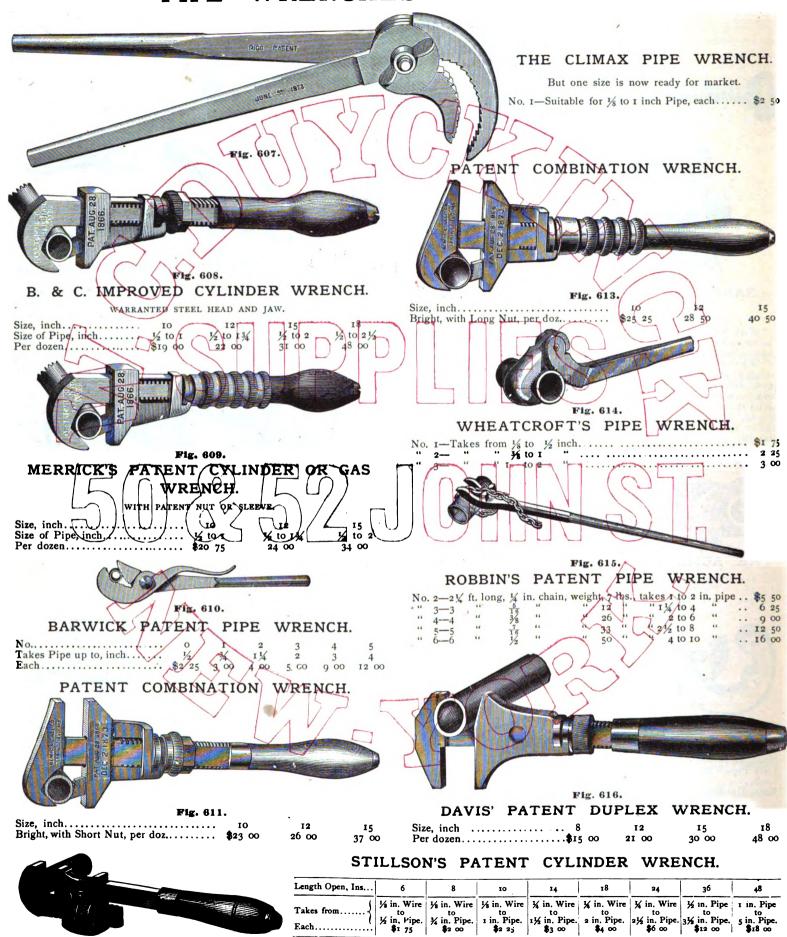
No	I	2	2
Cuts Pipe, inch	1/2 to 1 1/4	½ to 2	1½ 104
Lach	\$7 00	0.00	16 00
Extra Cutters	\$0 30	40	60



STANWOOD PATENT PIPE CUTTER.

No	T	2	2
Cuts Pipe, inch	1/2 to 3/	I to 2	2 10 3
Case Hardened	\$6 50	8 00	16 00
Steel Faced	8 00	10 00	20 00
Extra Cutter Wheels	25	35	50
" Blocks and Wheels	62	85	I 50

PIPE WRENCHES AND TONGS.



The 6 inch Wrench, with Screw Driver attachment on end of handle...... \$2 12-Nickel Plated, extra..... \$0 37

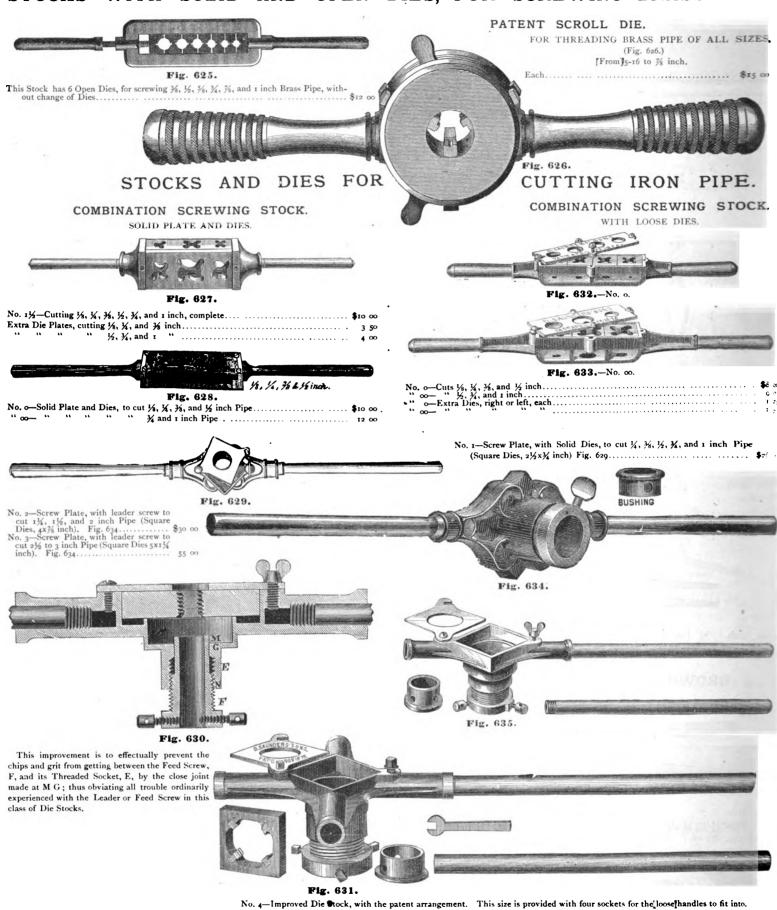
Fig. 612.





Fig. 616½.		Fig. 621.
Pipe Size, inch 2½ 3 3½ 4 4½ 5 6 Each \$5 40 6 20 7 00 8 00 9 10 10 00 12 50 1	5 00 18 00 Holds	
HUBER'S GAS PLIERS	PEACE'S	PATENT ADJUSTABLE PIPE TONGS.
	" I— " ½ " 2— " I, " 3— " 2	8, ¼, ¾, and ¼ inch Pipe, and all Rurners. \$2 50 4, ¾, ¼, and 1 inch Pipe or Sockets. 4 00 1, ¼, 1½, and 2 " " 7 00 ½, 3, 3½, and 4 " " 14 00 ble Steel Nuts, No. 0 50 "" " 1 60
Fig. 617. HUBER'S CAST STEEL GAS PLIERS. Size, inch 6 - 7 7½ 3 9 10 11 12 13 14 Black \$6 00 7 50 11 00 0 00 12 00 15 00 18 00 24 00 27 00 30 00 Polished 8 00 9 50 13 00 11 00 14 00 17 00 20 00 26 00 29 00 32 00	JAREC	KI'S ADJUSTABLE PIPE TONGS.
GAS PLIERS. Size, inch 5 6 7 8 9 10 12 Black \$6 00 9 00 10 00 11 50 13 50 Bright \$6 00 9 25 10 25 12 50 14 00		
ORDINARY PIPE TONGS.	y ♥ ₩ / / ·	Fig. 623. Sas Burner to 3/4 inch
Fig. 618.	. 4— "	½ to 2½ inch
Size, inch. 1/8 1/2 1/4 1/2 2 2/2 3 3/2 4 Each \$0 80 90 90 1 20 1 50 2 00 2 25 3 00 3 75 4 25 5 25 5 50 6 00	• •	% to 6 " t6 00
		PAGE'S AUXILIARY JAW. Ionkey Wrench, for turning Gas Pipe, or any round bodies
BROWN'S PATENT PIPE TONGS.	which need Pip	e Tongs.
	57)((Fig. 624.
Fig. 619. No 1 1½ 2 3 4 5 6 7	Jaw for 6 inch.	Wrefnch, per dozen \$6 00 " " 7 20 " " 9 00
No 1 1½ 2 3 4 5 6 7 Size Pipe ½ to ¾ ¼ to 1 ¼ to 1¼ 1 to 2 1½ to 3 2½ to 4 3 to 5 4 to 7 Each \$3 00 3 50 4 00 5 00 9 00 12 00 25 00 35 00	" 12 " " 15 "	" " 12 00 ° " " 15 00
MARSHALL PATE	NT PIPE	TONGS.
	•	No. 1—1/8 to 3/4 inch Pipe

STOCKS WITH SOLID AND OPEN DIES, FOR SCREWING BRASS PIPE.



MALLEABLE IRON SCREWING STOCKS, WITH LOOSE HANDLES AND SOLID DIES, FOR SCREWING IRON PIPE.

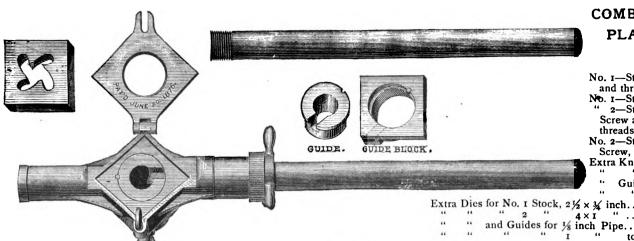


Fig. 686.

COMBINATION DIE PLATE AND PIPE CUTTER.

No. 1—Stock, with Dies, cuts and threads 1 to 1/2 inch.	* 15	0 0
No. 1—Stock, without Dies, "2—Stock, with Leading Screw and Dies, cuts and	7	
threads 2 to 1½ inch No. 2—Stock, with Leading	20	0 0
Screw, without Dies	11	00
Extra Knives for No. 1 Stock,		20
" " 2 "		30
" Guides " I "		25
		50
2½ × ¾ inch	I	50
4×1 "	3	00
inch Pipe	2	00
" to fit No. 2 Stock	4	00

PIPE TAPS AND REAMERS.



Fig. 637.



Diameter, inch Each.. \$1 12 Diameter, inch 11/4 4 62 Each...... \$3 75 6 25 10 50 15 00

Humphrey's Combined Drill Reamer and Tap.



Fig. 657.-PLASTER CHISEL.

Diameter, inch. 1 ¼ 7 25 Each..... \$2 50 3 00 6 00 10 75

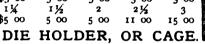


EXTRA BUSHINGS, OR GUIDES.

(Fig. 640.) For Pipe to, in. 1/2 Each \$0 20 25 40 30

Extra Dies for Pipes. (Fig. 641.)

Fig. 640. RIGHT OR LEFT HAND. Size, inch.. 1/ Each..... \$3 00 3 00 3 00 3 00 Size, inch.. 11/4 Each \$5 00 5 00



(Fig. 642.)



Fig. 641.

For using larger or smaller size dies in pipe stocks. Each, 30c. and 50c., according to size.

Outside and Inside Chasers.

(Figs. 643 and 644.)

1/8 to 4 in. Gas Pipe Threads, each, \$0 75 Fig. 643.

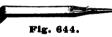
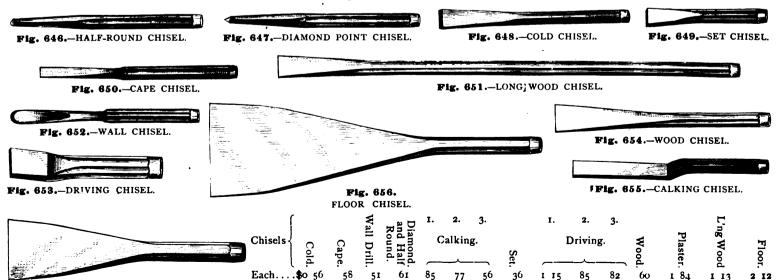


Fig. 645.

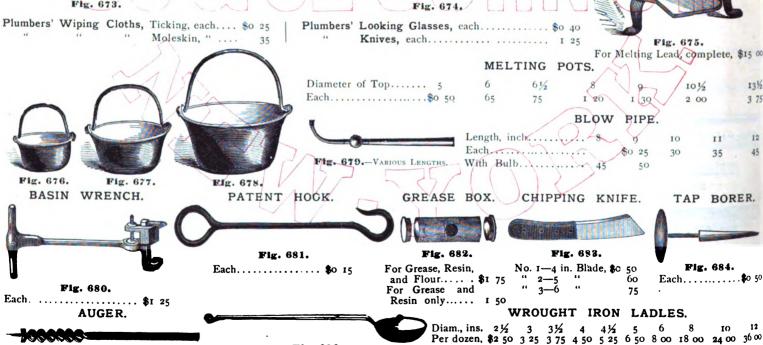
PIPE DRILLS.

Size, inch..... \$ 75 Size, inch..... 74 I 150 175 1 00 1 25

CHISELS.



PI UMBERS' TOOLS. BOSSING STICK. TOOL BAG. DRESSER. SIDE EDGE. Fig. 660. Fig. 659. Hickory. Boxwood. Boxwood. Dogwood. \$1 25 1 00 Hickory. Beech. **\$**0 60 60 I 25 \$1 25 ROUND IRON. COPPER BOLT HATCHET. CUTTING PLIERS. Fig. 663. Fig. 664. Fig. 662. Each \$1 25 Per Pound Each... \$0 60 80 STEEL BENDING PINS. Each, \$0 25 Fig. 658. Fig. 665. Fig. 666. PLUMBER'S FURNACE. CHARCOAL FURNACE. PLUMBER'S TORCH. SOIL CUP. Gas Fitter's Lamp. Fig. 669. Each.....\$0 50 TURN PIN. Fig. 671. Each \$2 00 SHAVE HOOK. Fig. 670. Fig. 668.—HALF-ROUND BAR. Each Box No. 2-12 inch diam. on Top... \$1 50 No. " " ... 1 75 I " " ... 2 00 2 2 25 3 Fig. 667. " 4—14 Fig. 672. 35 20 Brass..... " 5—15 35 Each..... \$0 50 50 SOLDERING COPPER, POINTED. Per Pound, \$0.50 Fig. 673. Fig. 674. Plumbers' Looking Glasses, each...... \$0 40 " Moleskin, " 35 Knives, each..... 1 25 Fig. 675. For Melting Lead, complete, \$15 00 MELTING POTS. Diameter of Top..... 5 61/2 131/2 101/2 Each.....\$0 50 65 I 20 BLOW PIPE.



Digitized by Google

1 1/2 3 60 GAS FITTER'S CEMENT.

4 50 5 lb. packages, per lb...... \$0 20

2 75

3 25

Fig. 686.

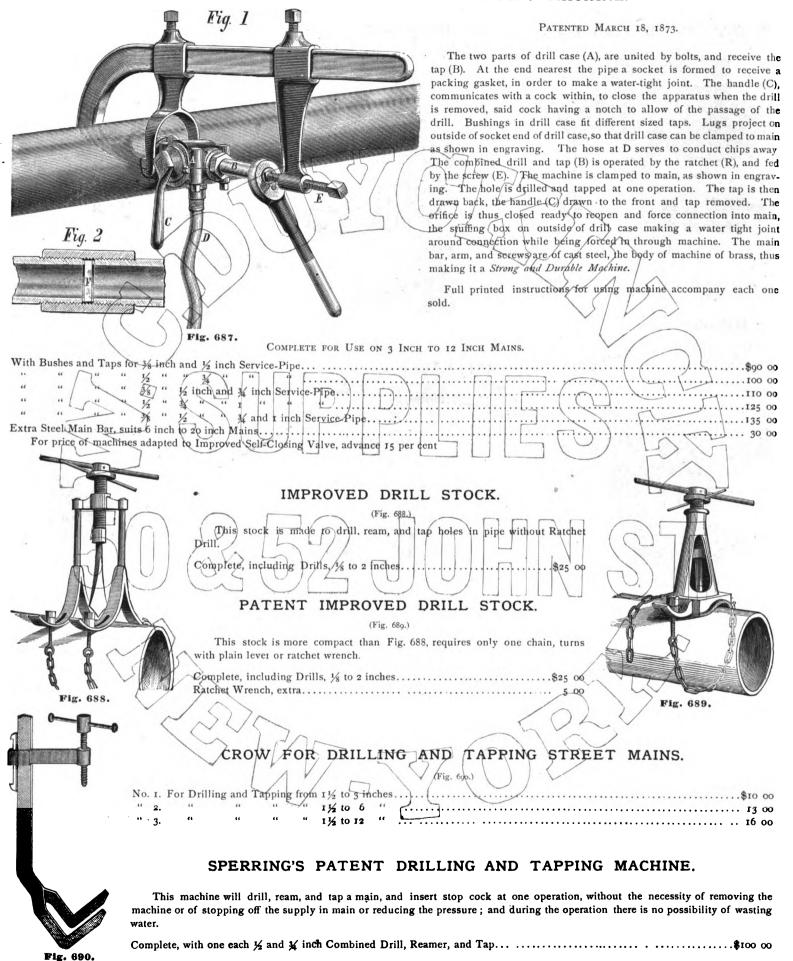
2 25

1½ 1 60

1 35

For other Tools not specified above, see other parts of this book.

YOUNG'S WATER AND GAS MAIN TAPPING MACHINE.



PIPE VISES.

PATENT COMBINATION VISE.

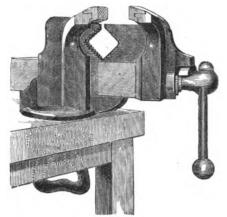


Fig. 691.

No.	1—1	akes	2	inch	Pipe	٠.	•				٠.		\$ 16	Oυ
	2	**	2	•									20	00

Malleable Iron Pipe Vise.

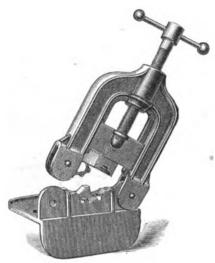


Fig. 692.

No.	1-1/8	to 2	inch	١				 		 	\$10	00
• •	2-1/4	to 3	**		 .				 		13	00

NASON'S PATENT PIPE VISE.

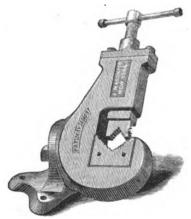
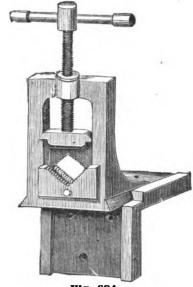


Fig. 693.

No.	1—7	To hold	Pipe	froni	1⁄8 t €	11/4	in. diam.	\$ 15	œ
••	2-	"	**	"	1/8 to	2	"	18	ου
••	3	••	••	**	1/4 to	3	**	30	00

Pipe Vise with Angle Plate.



No. 1—To hold Pipe from 1/2 to 2 in. diam. \$15 00 "2—" " 1/2 to 3 " 22 00

MALLEABLE IRON VISE.

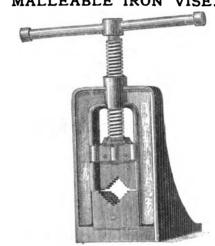
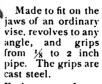


Fig. 695.

<u>1</u> /8	to	2	inch			•	•	•	•	•	•	•	٠.						•	•	•			•	٠.		•	•	\$ 8	O	J
-------------	----	---	------	--	--	---	---	---	---	---	---	---	----	--	--	--	--	--	---	---	---	--	--	---	----	--	---	---	-------------	---	---

Peace's Patent Pipe Clamp.



Each..... \$5 00

Robbins' Patent Pipe Vises.

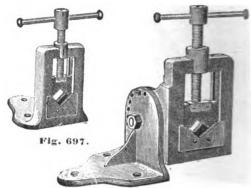


Fig. 698.

No.	1—	Takes	1/8	to	2	inch Pip	pe	\$12	œ
**	2	"	1/2	to	3	16		20	οx

Saunders' Patent Pipe Vise.

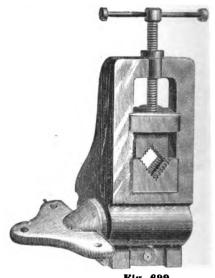


Fig. 699.

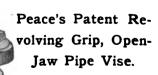
No. 1-To hold Pipe from 1/8 to 2 in. diam. \$15 00 " 2— " " ½ to 3 "

ORDINARY PIPE CLAMP.



Fig. 700.

Grips from	1/8	to	2	inches	\$9	α
------------	-----	----	---	--------	-----	---



Takes Pipe 1/8 to 2

inch.... \$12 00

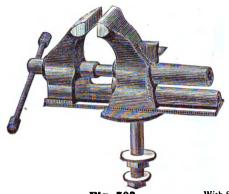
Fig. 701.

UNION AND BACKUS VISE COMBINED.

(Figs. 702, 703, 704, and 705.)

PIPE VISE.

FINISHING VISE.



Width of	Jaw	, 4	ins.,	weight,	57	lbs.	 \$17	50
44	"	5	**	"	79	44	 23	oc

	Fig. 703.		1	Vith Seat, Extra.
Width of Jaw, 3 ins.	, weight, 24 lbs	\$ 6	50	
" " 4 "	" 42 "	9	00	I 25

COACH MAKERS' VISE.

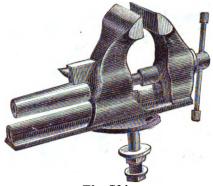


Fig. 704.

These Vises have smooth jaws, and are made especially for coach makers' use. The width of the jaw is 4 inches; depth of face of jaw, 2 inches; distance from the top of jaw to the screw, 5 inches; jaws open 8 inches; weight, 52 lbs.

Each...... \$10 00 | With Seat, extra, \$1 25

HEAVY OR CHIPPING VISE, COVERED SCREW.

" 153 " 33 00

SMITH'S IMPROVED HEAVY CHILLED BEAM VISE.

I 75



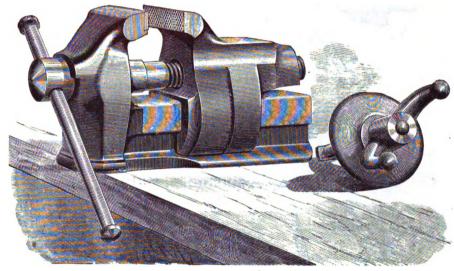
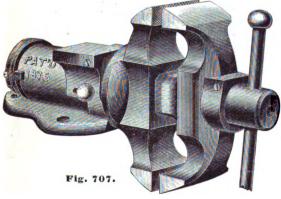


	FIG. 706.—HEAVY OR CHIPPING VISE, COVERED SCREW.								F1g. 700.															
Width	of J	aw,	1 1/2	in.,	weigh	ıt, 31/2	lbs	5	\$ 3 (00	With Iron	Seats	, extra,	\$0	50						_			
**	**		134	"	**	5	••		3	50		"	**		50		No.	22 ×	-≯8	inch	Jaw,	weight,	15	lbs \$3 50
**	"		Z		**	9	**		4 (00		44	**		50		44	3-2 ×	34		"	44	30	" 6 oo
-4	"		21/2	"	**	22	**		5 !	50		44	**		75	•		4-4×			**	"	15	" 8 oo
. 4	• •		3	• •	"	39	"		7 9	00	44	"	"	I	00				•					•
	"		31/2	"	"	47	"		9 (00	••	"	44	I	00			5—5 ×			• •	"	80	" 12 50
"	44		4	6 -	64	56	"		10	00	**	"	"	I	25		**	6—6 x	1 1/4		"	"	125	" 17 00
• •	"		41/2	**	**	67	**		12	50	44		**	1	50									
**	*44		5	**	**	75	**		17	00	46		**	I	75									
"	**		6	"	"	116	"		25	00	44	"	**	2	00									
	"		7	**	**	169	• •		30	00	No Seat.													



PENFIELD PATENT DOUBLE JAW VISE.

2 inc	ch Ja	w	.	\$ 6 o o
4	**			12 00

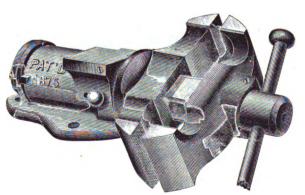
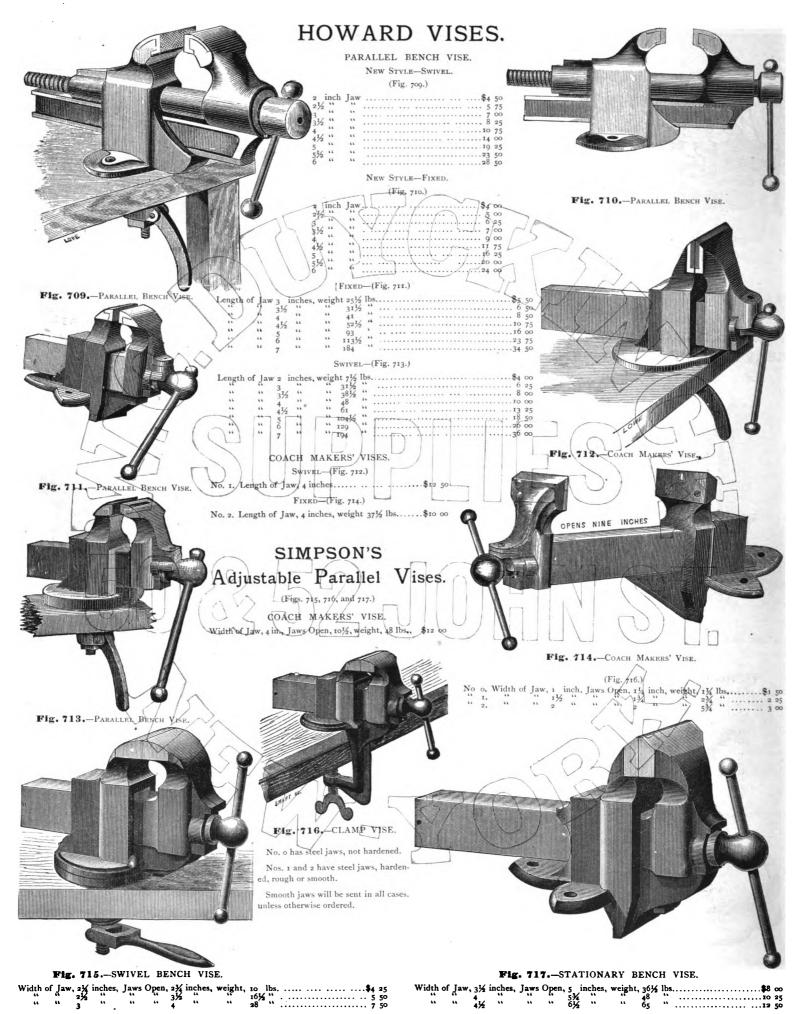
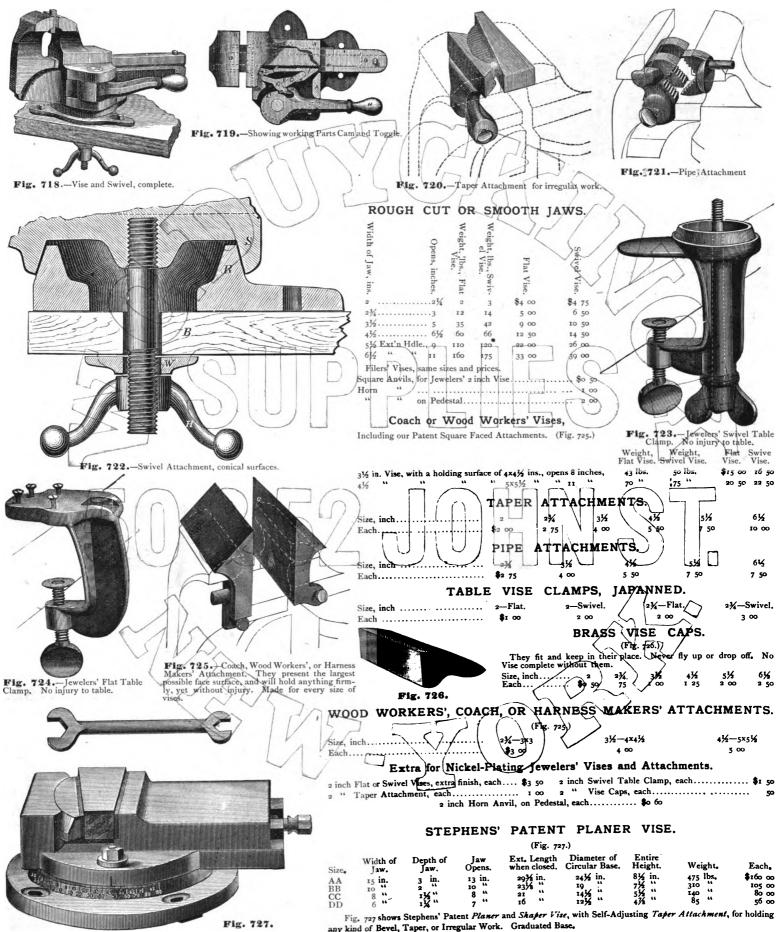


Fig. 708.



STEPHENS' PATENT PARALLEL VISE,

WITH SWIVEL, TAPER, PIPE, AND OTHER ATTACHMENTS.



PARKER'S VISES.

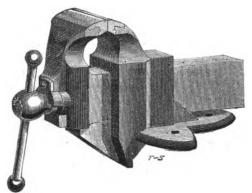


Fig. 728.

PARALLEL VISES.

BLACK.

LENGTH JAW, INCHES.	PARALLEL,	EA. (Fig. 728).	SWIVEL, EA. (Fig. 729
13/4			\$ 4.00
21/4			5 00
31/4	\$ 6	25	, 7 ^{oo}
35⁄8	7	00	8 75
41/4		00	11 00
4¾	11	75	14 50
53⁄8	16	25	20 50
6 1⁄8	24	00	
81/8	50	00	

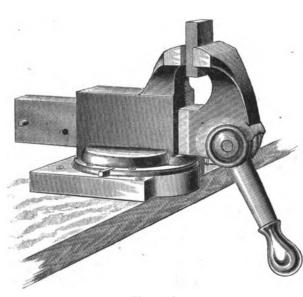


Fig. 730.

HALL'S

PATENT SUDDEN GRIP VISES.

Size of Jaw, inches, 2	3	4	Coach.
Each	8 50	12 50	14 00

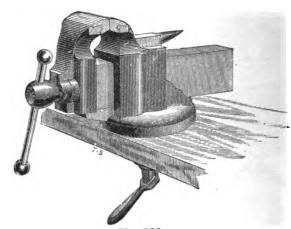


Fig. 729.

PARALLEL SWIVEL VISES.

GREEN.

Made by Parker, but without his Improvements.

Length Jaw, Inches.	PARALLEL, EACH.	SWIVEL, EACH.
2 1/4		\$ 4 ∞
31/8		6 25
31/4	\$ 5 50	
35⁄8	6 50	8 oo
41/4	8 50	10 00
43/4	10 75	13 25
53/8	16 00	
61/8	23 75	•

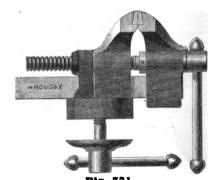


FIg. 731.

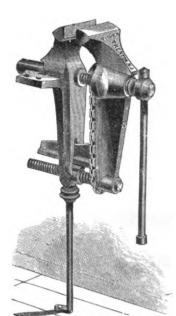
MERRELL'S

PATENT PARALLEL SWIVEL VISE.

WROUGHT IRON BAR-Solid Box.

Width of Jaw, inches 4 Opens, inches 8 Weight, lbs 50 Size of Wrought Bar, inches 2½ × 1½ Diameter of Screw, inches 1½ Price \$11 00	5 9 80 2 1/4 × 1 1/4 1 3/6 \$13 00
Width of Jaw, inches 6½ Opens, inches 10 Weight, lbs 130 Size of Wrought Bar, inches 2½ × 1½ Diameter of Screw, inches 15% Price \$17 00	8 12 167 3×1½ 158 \$22 00

NEW DOUBLE SCREW PARALLEL "LEG" VISE.



Νo.	ı—J	aws,	31/2	×	¥	inch,	Screws	1/8	inch diameter,	Lever	, 9	inches long,	Opens	414	inches	\$ 8	00
**	2—	**	41/2	× I	ī	**	**	I 1/8	**	**	13	**	"	514	"	12	00
**	3—	**	514	× I	1/8	**	**	11/4	и	• 6	16	"	"	61/2	"	17	00
"	4-	"	614	×	1/4	"	44	1 1/2		**	19		**	71/2	"	22	00
44	5—	**	7	×	11/2	**	"	134	**	**	24	"	"	9	"	30	00
61	6—	**	8	×I	1/2	44	44	11/4	**	"	26	"		10	"	34	00

All sizes of these Vises furnished with Swivel Attachment, at an additional cost of \$1 00 to \$3 00.

WROUGHT IRON BENCH SCREWS.

Double Thread, Wooden Handle, and Movable Collars.

Size, inch..... 11/2 Per dozen..... \$5 75 7 00 8 25 13 00

WOODEN BENCH AND TAIL SCREWS.

Size, inch 2	21/4	21/2
Per dozen \$4 00	4 50	4 50
Brown's Patent Beveled Thread		7 50
Improved Square Thread		6 00
Tail Screws		8 00

SOLID BOX WROUGHT IRON VISES.

STEVENS' PATENT HAND VISES.

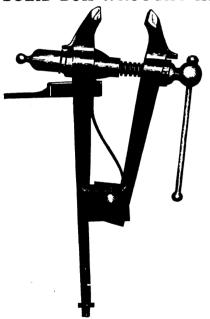
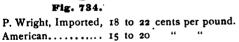


Fig. 732.



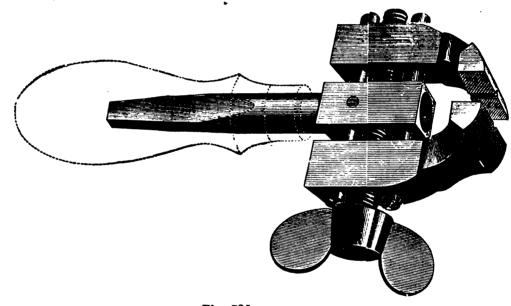


Fig. 785.

This Vise will centre and hold firmly any tool placed in it, and may be used in the hand, on a bench, lathe, or bit stock.

Fig. 786.

HAND VISE TABLE ATTACHMENT.

Size, inch.... 3 to 4½

Each...... 1 50 1 50

HAND VISES.

31/2

I 25

4

I 50



STUBS' HAND VISES.

Size, inch...... 3 3½ . 4 Each.......\$1 15 1 25 1 35 1 50 2 00 2 50 3 25

FRENCH PIN VISES.

IMPROVED HAND VISE. ,



Per dozen...... \$24 00

I 50

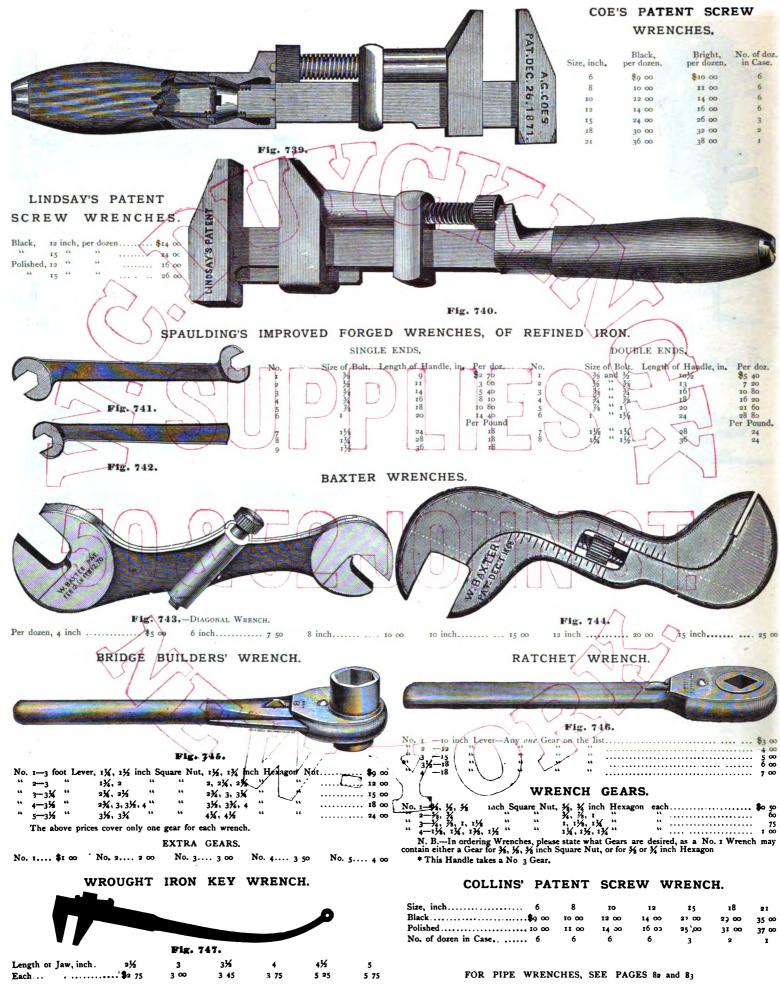
5

2 00

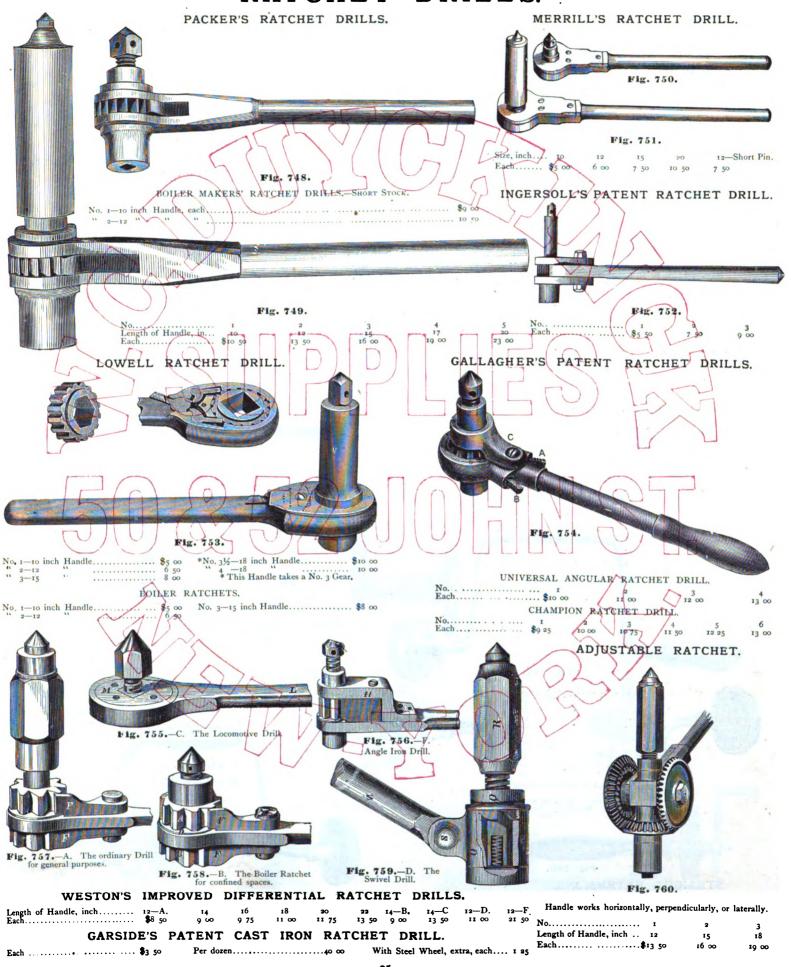
1 50

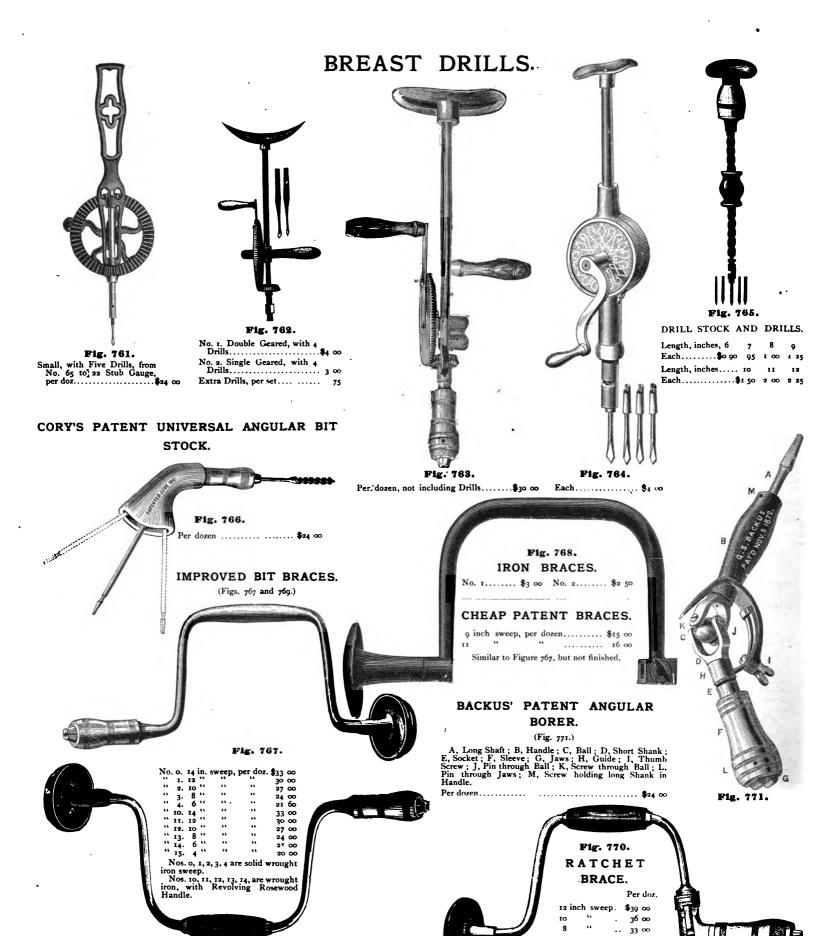
41/2

I 50



RATCHET DRILLS.





STRAIGHT EXTENSIONS.

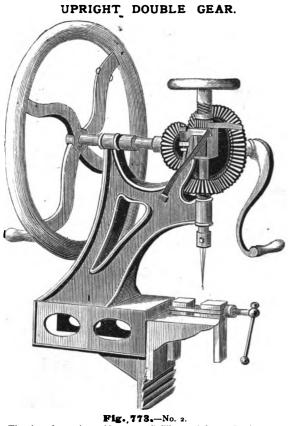
Fig. 769.



In three sizes, 18, 21, and 24 inches long; using the same chuck that is on my brace for holding the bit. The shank is like an ordinary bit shank, and fits any brace. The rod is nicely finished, and it is a very handy tool to reach places which could not be reached with the bit alone. Per dozen, \$16 00.

Fig. 772.

COE'S DRILL PRESS AND SCREW CUTTER.



UPRIGHT DOUBLE GEARED DRILL PRESS.

Fig. 774.-No. 1.

This machine has Self-Feed and Vise, which are adjustable, nd will work with or without them, as may be desired. Each...... \$40 00 Less without Vise.... \$2 50 COE'S BENCH DRILL.

This machine is single-geared. Compact in construction, and desirable for light drilling. Each...... \$12 00

Fig. 775.

Fig. 776.-No. o.



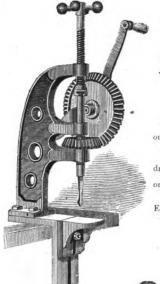
This machine is suitable for carriage and blacksmith work, and ordinary drilling. It is of the same construction as Nos. 2 and 1, with the exception of feed and vise.

Weight, 100 lbs. Each..... \$28 00

PATENT TWIST DRILL BITS.

Made expressly for Coe's Drill Press, and will fit any of the machines,





WHITON'S HAND DRILL.

Designed for use in shops without power.

The platform underneath the drill can be lowered six inches, = or removed entirely.

Each \$12 00

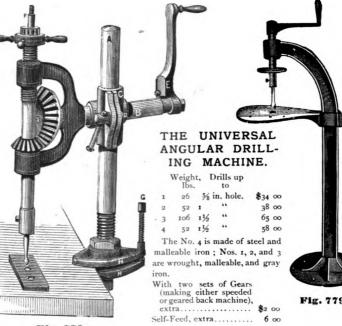


Fig. 778.

HAND DRILL.

PORTABLE.

With Drills of the following sizes:

1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 3/4. and r inch.

Each..... \$25 00

Fig. 779.



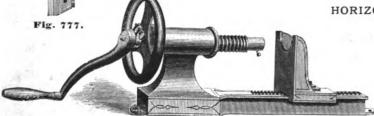


Fig. 780.

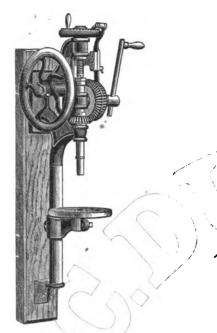
 No. 4. With Feed, \$7 ∞; without Feed
 \$6 ∞

 Common Blacksmith Drill, each
 5 ∞



Fig. 781.

WORCESTER UPRIGHT SELF-FEEDING DRILLS.



Drills from 1-16 to 3/8 inch hole. Length, 26 inches. Weight, 30 lbs.

The above is fitted for a No. 2 Beach Chuck, or can be used without.

\$20 00

The Chuck would be extra.

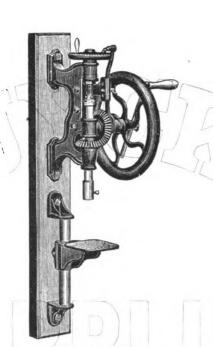
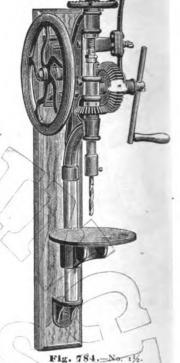


Fig. 783.-No. 1.

Drills from 1/8 to 3/4 inch hole. Length, 42 inches. Weight, 95 lbs.

Each, with Balance Wheel..... \$28 oo " without "



Drills from 1/8 to I inch hole. Length.

inches. Weight, 120 lbs.

Each....

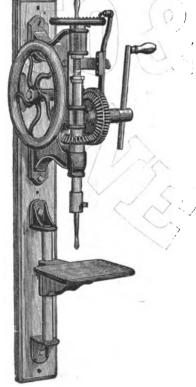


Fig. 785.-No. 2.

Drills from 1/8 to 11/4 inch hole. Length, 54 inches. Weight, 160 lbs. Each \$48 00

THE MORSE DRILL.

MADE TO FIT THESE MACHINES,

	MAI	DE TO	F	1 111	ESI	in white	nn	Es	1		
*	inch	\$		65	2	5-32	incl	1	\$2	60	
9-32	"			70	I	3-16	**		2	80	
5-16	"			75	2	7-32	••		3	00	
11-32	"			80		7/8	**		3	20	
3/8	"			85	2	9-32	"		3	40	
13-32				90	1	5-16	"		3	60	
7-16	"		1	00	3	31-32	"		3	80	
15-32	"		I	10	1		"		+	-00.	
1/2	1.7.		1	20_	1	1-32	- 44 3		14	20	1
17-32	1./.,	<i></i>	1	30	1	1-16	p.		14	40	
9-16	. "		I	40	1	3-37	"		4	66	
19-32	· ··		1	50		1 1/8	-,••		4	80	
5∕8	"		I	65	Í	5-32			5	00	
21-32			1	80	1	3-16	"		5	25	
11-16	"		2	00	1	7-32	**		5	50	
23-32	. "		2	20		11/4	••		5	75	
3/			2	40							

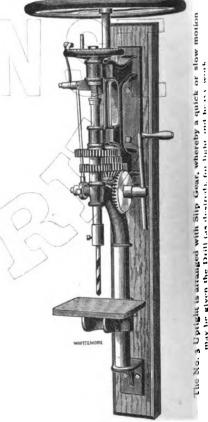
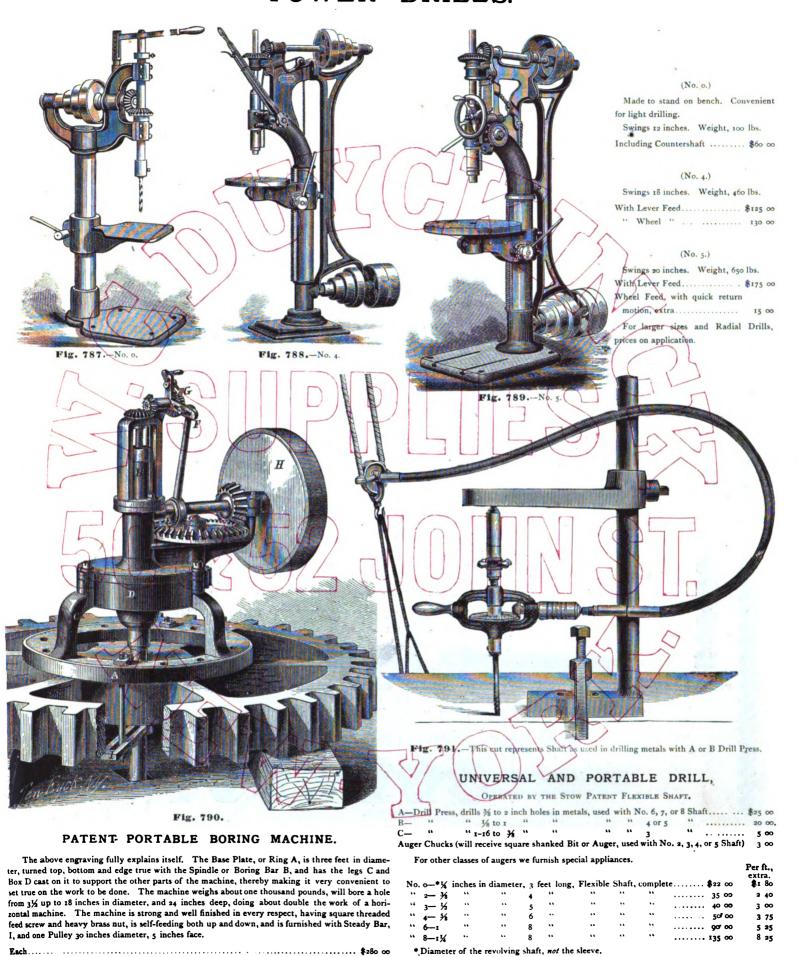


Fig. 786.-No. 3.

Drills from 1/2 inch hole. Weight, 25 lbs. Each...... \$75.0

POWER DRILLS.



PHILLIPS' SELF-WITHDRAWING BORING MACHINES.

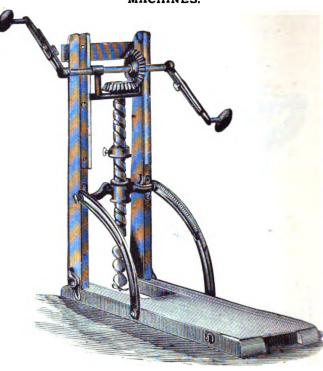


Fig. 793.

Fig. 2792. Wood Top Angle ... each, \$6 25
Regular Machine ... 4 75
With Polished Gears and extra finish (additional) ... 1 75
Snell's and Phenix Augers fitted to the machines, and furnished without extra charge for fitting.
Boring Machines, when packed in cases of two and four in each case, will be charged for at 50 and 75
cents per case.

SNELL'S CAST STEEL CAR BITS.

SNELL'S EXTRA CAST STEEL AUGER BITS.

Complete, with Snell's Augers in sets of 18 quarters...

(Fig. 794.)

 Sixteenths.
 3
 4
 5
 6
 7
 8
 9
 10
 11

 Per dozen.
 \$3.50
 3 00
 3 00
 3 25
 3 25
 3 50
 3 00
 4 25

 Sixteenths.
 12
 13
 14
 15
 16
 18
 20
 22
 24

 Per dozen.
 \$4
 50
 4.75
 5
 50
 6 00
 8 00
 9 00
 9
 10
 80

 In sets of 24 quarters, per dozen.
 3
 50

 Snell's Handled Auger Bits, assorted, 4 to 8 sixteenths, per dozen.
 3
 50

SNELL'S BORING MACHINE AUGERS.

(Fig. 796.)

SNELL'S SOLID CAST STEEL AUGERS.

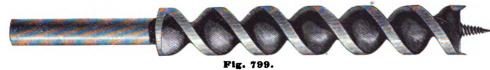
LEWIS' PATENT SINGLE TWIST MACHINE AUGER BIT.

FOR BORING WITH OR ACROSS THE GRAIN.



Fig. 798.

EXTRA HEAVY DOUBLE TWIST MACHINE AUGER BIT.



Under 9 inch length of Twist, for each 1/2 inch of diameter. \$0.40 9 to 12 " " " 12 to 15 inch length of Twist, for each 1/2 inch of diameter. \$0.40 9 to 12 " " 15 to 18 " " " 17 " " 18 " " " 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 19 to 18 " " 1 EXTRAS.

CLARK'S PATENT EXPANSION BITS.



Small with 2 Cutters, ½ to 7% and 7% to 1½ in., per doz.. \$18 ∞ Extra Cutters for No. 1, ½ to ½ inch, each ... 2, ½ to 1½ " " Large size, with 2 cutters, 3/8 to 13/4 and 13/4 to 3 inches, per dozen...... 26 00

Fig. 797.

Morse Patent Straight Lip Increase Twist Drill.

TURNED DRILLS.

TAPER OR STRAIGHT SHANKS.

Patent Increase Twist and American Standard;
Drills.

1 acone a		Drills.	2211017041	Otanda.d.	
No. of Socket for Standard Taper.	Diameter of Drills, ins.	Length, inch.	Each.	No. of Socket for Morse Taper.	
No. 4 Socket, \$2 65 No. 3 Socket, \$2 10 No. 1, \$1 35	14 93 6 183 (2) 183 7 153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/153 1/15	61/4 61/4 61/4 61/4 61/4 61/4 61/4 61/4	\$0 65 70 75 80 85 90 1 10 1 30 1 40 1 50 1 80 1 95 2 10 2 25 2 40 2 25 2 70 2 85 3 00 3 40 4 00 4 40 4 80 5 40 5 40 5 40	No. 1, \$1 30 No. 2, \$2 00 No. 3, \$2 75	
No. 5 Socket, & oo	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	143/8 143/8 145/8 145/8 145/8 155/4 155/8 155/8 155/8 165/8 166/8 161/2 161/2	4 80 5 00 5 40 5 60 5 80 6 00 6 25 6 50 6 75 7 75 8 00 8 25 8 50 8 75 9 25 9 25 10 50 10 80 10 90 11 00	No. 4, \$4 00	

The above we make by 64ths, if ordered.

STRAIGHT SHANKS.

STUBS' STEEL WIRE GAUGE.
STRAIGHT SHANKS,

		. .					
Diameter of Drills, ins.	Length, inch.	Per dozen.	Each.	Numbers by Gauge.	Length, inch.	Per dozen.	Each.
16	2 1/2	\$1 10	\$0 10	t to 5	4	\$2 35	\$ 0 22
<u>64</u>	25/8	1 20	11	6 to 10	3 11	2 25	21
64 3 32 7 64 1/8 64	23/4	1 30	12	11 to 15	3½	2 15	20
84	2 1/8	1 50	14	16 to 20	31/4	2 00	19
1/8	3	1 65	15	21 to 25	316	1 85	18
84	31/8	ı 85	17	26 to 30	218	1 70	16
3 2	31/4	2 00	18	31 to 35	25/8	1 50	15
11.	33/8	2 25	20	36 to 40	2 1 8	1 30	13
3	3½	2 50	21	41 to 45	2 1/4	1 20	12
13	3 5∕8	. 2 75	24	46 to 50	$2\frac{1}{16}$	1 10	11
32	3¾	3 00	27	51 to 65	13/4	1 10	10
15	31∕8	3 25	30	-			
1/4	4	3 50	32	BIT	STOC	K DRI	LLS
17	41/8	3 75	34				
3 2	4 1/4	4 00	36		(Fig.	801.)	
19	43⁄8	4 25	36 38	II			
16	4 1/2	4 50	40	Diameter o Drills,	f Per d	lozen.	Each.
81	45/8	4 80					
5 1 1 6 3 1 2 5 4 1 2 5 4 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6 5 1 6	43/4	5 20	43 46	يد اا	\$1	60	\$ 0 15
23	47/6	5 60	50	16	.		₩- ·J

The above comprises the Jobber's and Machinist's Sets.

6 40 6 80

For very exact work, a gauge, plainly marked, should accompany an order.

Drills of taper length, with ½ inch Straight Shank, same price as Turned Drills.

	(1.8. 00)	
Diameter of Drills.	Per dozen.	Each.
16	\$ 1 60	\$ 0 15
3 2	1 75	17
3 32 1/8	2 25	22
32	² 75	26
3 16	3 25	30
38	3 75	35
1/4	4 50	40
38	5 25	45
5 16	6 oo	55
11	7 o o	60
3/8	8 00	68
13	9 00	78
7 16	10 00	85
16	11 00	93
1/2	12 00	1 00
1		1

Per set, 1-16 to 1/2 by 32d,
1/4 to 3/6 by 16th, boxed, \$2 80

To prevent confusion in filling orders, parties ordering will please state which taper is desired.

Straight Shank Drills, Taper lengths, at Taper Shank prices.

The Standard Taper corresponds with the Manhattan Taper.

Drills of any size or length, with Straight or Taper Shanks, made to order, and to fit any socket desired.

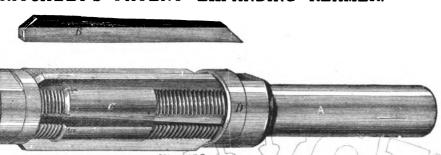
The Patent Grinding Line is applied to Patent Increase Twist Drills only. Parties ordering will please state whether they would have the Grinding Line applied or not.



DRILLS.

PER SET.	Patent Increase Twist Drill.	Amer. Standard Taper Drill Sockets.
No. 1—Set of Taper Shank Drills, 1/2 to 1 inch, varying by 16ths		
" 3— " " 3/2 to 3/4" " 32ds, 3/4 to 1/4 inch, varying by 16ths	3. 3.	
" 4— " " 3/8 to 3/4" " 32ds, 3/4 to 2 " 16ths	148 00	
" 5— " Drills, Straight Shanks, 18 to 1/2 inch, mounted varying by 64ths	11 00	
" 6— " " " " 18 10 12 " " " 32 fts	5.75	
" 7— " 60 to 3/6 inch, mounted	10 40	
" 8- " Steel Wire Gauge, I to to, mounted)	8 50	
" 9-Half Set of Drills, Steel Wire Gauge, alternate numbers, 1 to 60, mounted	. 4 50	
" 10—Jeweler's Set of Drills, nearly mounted in a Mahogany Case, with Cap, containing 36 Drills, from No. 30 (1/2 inch) to 65, Steel Wire Gauge.)	
" II—Set of Taper Shank Drills, 36 to 2 inch, varying by 32ds	270 00	
" Steel Sockers, to hold Drills from 1/4 inch	. 6 00	\$ 7 75
One Large Steel Socket, to hold Drills from 1 to 2 inch	4 00	4 00
REAMERS.	5	
JOBBER'S SET, SHORT SET. CHUCK REAMERS		
Diam. Full Length Diam. Full Length Diam Full Length	15	144
of Length, Flute, Each. Reamer, Length, Flute, Each. Reamer, Length, Flute, Each.		
inch. inch. inch.		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\mathcal{O}_{\mathcal{A}}$	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		
11 711 318 2\\ 60\\ 3\\ 4\\ 1\\ 2\\ 90\\ 3\\ 4\\ 2\\ 60\\ 3\\ 2\\ 60\\ 3\\ 2\\ 60\\ 3\\ 2\\ 60\\ 3\\ 2\\ 60\\ 3\\ 2\\ 60\\ 3\\ 2\\ 60\\ 3\\ 2\\ 60\\ 3\\ 2\\ 60\\ 3\\ 2\\ 60\\ 3\\ 2\\ 60\\ 3\\ 2\\ 60\\ 3\\ 2\\ 60\\ 3\\ 2\\ 60\\ 3\\ 2\\ 60\\ 3\\ 2\\ 60\\ 3\\ 2\\ 60\\ 3\\ 2\\ 60\\ 3\\ 2\\ 60\\ 3\\ 2\\ 60\\ 3\\ 2\\ 60\\ 3\\ 2\\ 60\\ 3\\ 2\\ 60\\ 3\\ 2\\ 60\\ 3\\ 2\\ 60\\ 3\\ 3\\ 2\\ 60\\ 3\\ 3\\ 2\\ 60\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Fig	805.
		REAMERS.
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	-	
716 77 73/ 2 80	Diam. of Dength, inch.	Size of Hole, Each.
110 (1276 6 to 178 9 44 4 50	inch.	inch.
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	21/2	½ \$1 60
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1 2 1/2 2 1/2 1/2 2 1/2 1/2 2 1/2 1/2 2 1/2 1/	\$1 60 1 60 1 70 1 70 1 80 1 80 1 80 1 80 1 90 1 90 1 2 20 1 2 40 1 2 80 1 3 10 1 3 70
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	I 2½	½ I 70 % I 80
134 131/2 634 10 00 11/8 11/4 534 8 50 11/8 131/2 234 4 40 131/2 131/2 634 10 00 11/8 11/4 534 8 50	I 1 2 3/4 I 1/8 2 3/4	5% I 80 5% I 90
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	I 8 234 1 1 2 34	5/8 2 00 5/8 2 20
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1 5 3 1 3 8 3 1 7 3 3	34 2 40
Per Short Set, ¼ to 1 inch	1 1 1 2 3 4 2 3 4 1 1 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	34 2 60 34 2 80
" " ¼ to 1¼ "	1½ 3 1 ⁹ / ₁₆ 3	34 3 10 34 3 40
" " ¼ to 1½ " 64 00	1 5/8 3 1 1 1 3 1/2	34 3 70 1 4 10
" Jobber's Set, 1/4 to 1 inch	$\begin{array}{ccc} 13/4 & 31/2 \\ 113/4 & 31/2 \\ 31/2 & 31/2 \end{array}$	I .4 50 I 4 90
" " ½ to 1½ "	1 7/8 3 1/2 1 1/6 3 1/2	1 5 30
" " ¼ to 1½" 80 00 smaller than -Whitworth's Standard Gauges.	2 31/2	1 6 30
Walnut Case for Set ¼ to 1 inch	21/8 33/4	1 4 6 80 7 30
" " " V to IV "	216 334 214 334	1 4 7 70 1 4 8 10
Solid or Shell Reamers of any size or length, made to .	2 3 3 3 3 4 2 3 4	1 k 8 50 1 k 8 75
order.	1 ½ 3½ 3½ 2 1½ 3½ 2 1½ 3¾ 2 2½ 3¾ 2 2½ 3¾ 2 2½ 3¾ 2 2½ 3¾ 2 2½ 3¾ 2 2½ 3¾ 2 2½ 3¾ 2 2½ 3¾ 3¾ 2 2½ 3¾ 3¾ 2 2½ 3¾	1 1 6 80 1 4 7 30 1 4 7 70 1 1 8 50 1 1 8 50 1 1 9 00 1 1 9 25

CRITCHLEY'S PATENT EXPANDING REAMER.



No.	Begins at, inch.	Expands to, inch.	Length of Cutter, in.	Full Length, inch.	Each
1	34	97 32	25/8	7	\$7 50
2	32	32	23/4	7 1/2	7 75
3	31	1 1/8	3	9	8 25
4	11/8	$1\frac{9}{32}$	31/4	II	9 25
5	I 9 3 2	135	4	12	10 50
6	I 15	$1\frac{11}{16}$	4	12	12 00
7	116	115	41/4	14 .	13 75
8	116	21/4	434	17	16 00
9	21/4	25/8	51/4	18	18 50
IO	25/8	316	61/4	20	21 50
II	316	316	7	23	25 20
12	376	41/8	734	24	29 00

Whole Set..... \$175 00

The above is a tool that supplies a want in every machine shop. For a repair shop where there are so many different sized holes, it will prove indispensable in saving a great deal of time and vexation in making fits where the holes are a little small, and no ready facilities for making them larger.

The body, A, has five grooves fitted with cutters B; a screw thread is cut on the body of the tool, and a portion of it is left in the centre, as at C, to strengthen and prevent springing; the cutters B, are beyeled at each end, and confined in their places by nuts D, so that it is only necessary to slacken them off and slide the cutters up or down in the tapered grooves to expand or contract their outside diameters, and thus adapt them to all kinds of work.

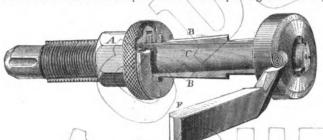


Fig. 807.

LECOUNT'S PATENT EXPANDING MANDREL, or ARBOR.

					(Fig	807.	1	/	1	/	5	1					
No.	1-Takes	s any	hole inclusi	ve between	1/2	and	I	ing	h	1.1	١				 	 \$10	00
"	2- "	. 44	44	**	I	and	I!	14		/	. /.		·		 	 14	00
	3- "	11	14	44	11/2	and	2	- 44							 	 18	00
	4- "			46		and											
**	5- "	44	**	**		and										48	
Full	Set									/		_	-	1		122	

EXPLANATION OF CUT C is the steel mandrel; B B are two of the three keys that are drawn up and pushed down in a dovetailed groove, rising from the point by the nut. A groove is turned inside the nut A, which catches the head of the key B, and thus draws them up to tighten the work. This, like any mandrel, requires a true hole to make a true job. Very heavy cuts, on large diameters, can be done on it without slipping. F represents the tool in operation.

WHITON'S PATENT CENTRING MACHINES.

(Figs. 808, 809, and 810.)



Fig. 808.-No. 1. Centres all sizes round iron, from 1/4 to 31/4 inch diameter . Countershaft, extra.



Fig. 809.-No. 2. Centres all sizes round iron, from 1/4 to 41/2 inch diameter..... \$68 00 Countershaft, extra.....

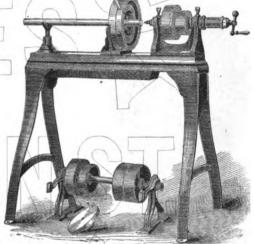
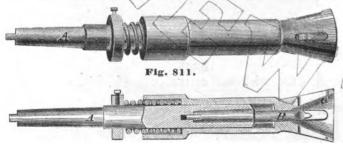


Fig. 810.-No. 3. Centres all sizes round iron, from 1/4 to 51/2 inch diameter, including Countershaft.. \$100 00

IMPROVED CENTRING ATTACHMENT.



DESCRIPTION.—A. in the cut, represents the drill socket, arranged in the revolving spindle of a lathe, in the ordinary manner. B is the bit secured in the drill socket, A. Upon the drill socket is loosely fitted a slide sleeve, C, which has a funnel-shaped inner end, a, that embraces the end of the bit, as is clearly shown in Fig. 812. The sleeve, C, can slide on the drill socket. A spring, D, bearing against the outer end of the sleeve, holds it forward on the spindle, by acting on an adjustable collar of the drill socket.

It will centre iron from 1/4 to 11/4 inch diameter.

GARDINERS' CENTRING AND SQUARING ATTACHMENT FOR LATHES.

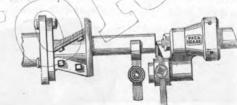


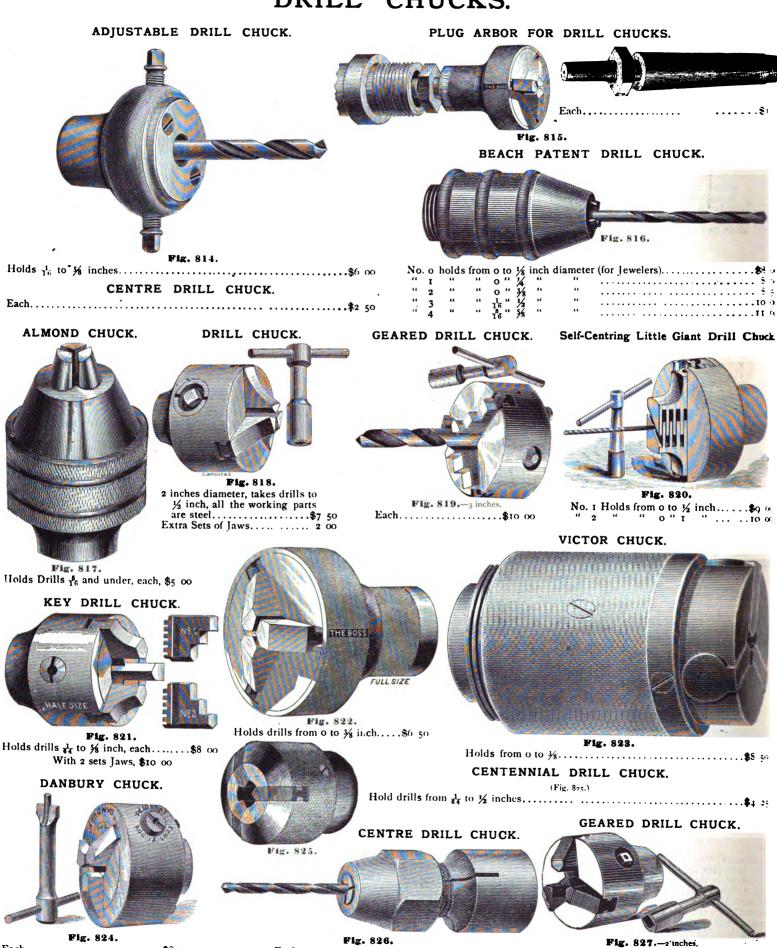
Fig. 813.-Represents the Attachment on the Lathe, with mode of centring Shafts.

In ordering machines, be particular to send us the diameter of the Dead Spindle of the Lathe upon which the Attachment is to be used.

This machine will centre and square up any size shafting, from 1/8 to 21/4 inches in diameter. The length it will centre varies according to the length of the lathe bed upon which the Attachment is used. For a steady rest, make a common fork of tool steel, split at one end 21/2 inches, and spread about 17/8 inches; place in the tool post of Lathe the same as a turning tool.

Centring Attachment, complete	\$ 35	00
Boxing, extra		25

DRILL CHUCKS.



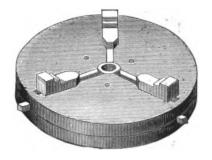
Each.....\$2 50

104

Each......\$8 50

Holds drills to ½ inch......\$7 50

THE HORTON LATHE CHUCK.





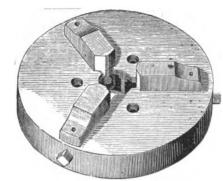
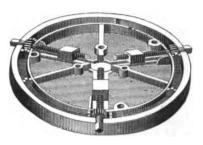


Fig. 829.—Inside Jaw Chick



THREE JAWS.

6 inch diameter and less. \$26 00
9 " 34 00
12 " 44 00
15 " 52 00
18 " 62 00
21 " 80 00
24 " 100 00
30 " 170 00



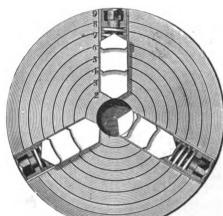
Fig. 828.



36	**	For Car Wheels
30	**	eter\$230 o For Car Wheels
		FOUR JAWS.



Fig. 830.-Showing Jaw. 18 inch diameter.....



WESTCOTT PATENT CHUCK

THREE JAWS.

4	inch diam	eter, will ho	ld' 5 ia	ach ins	ide Ja	w		 	 	 	 	 	 		\$ 22	00
6	**	**	8	**	••-			 	 	 	 	 	 		26	00
Q	**	**	12	**	**		·	34	00
12		**	15	••	••											00
15	**	**	18	••	• •										52	00
15 18	**	**	211/2	**												00
21	+4	**	26	٠٠.	••											00
24	••	**	30	••	**											
	**	**	37	••	••										170	
36	**	44	42	**	••										230	
Fo	 r Car Whe	eels, "	43	••	••										250	
				F	our	JA'	ws									
4	inch Dian	neter, will he	old s i	inch in	side l	laws.		 	 						\$ 25	00
ň		**	8	••	>			 		 	 		 		32	
	**															

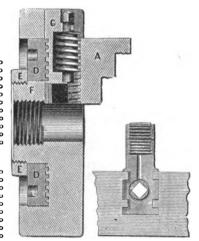


Fig., 832.



JUDSON'S LATHE AND PLANER CHUCK.

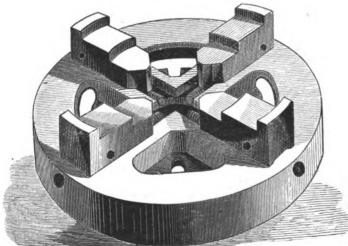


Fig. 833.

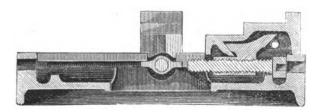


Fig. 834.

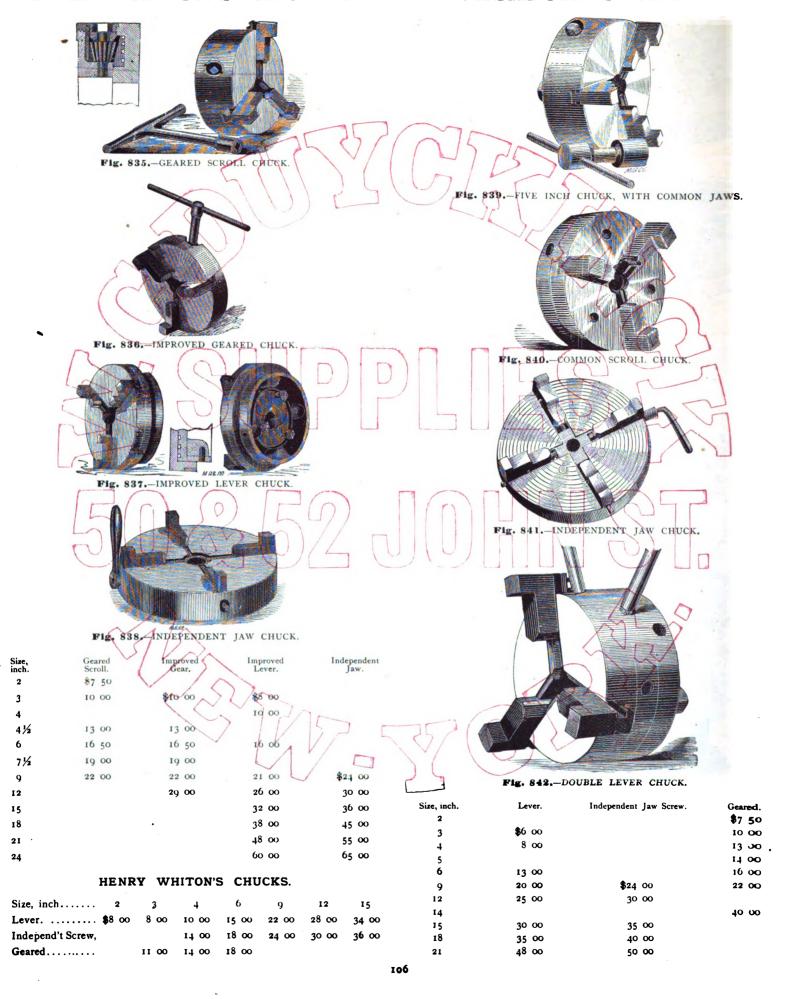
The special feature of this Chuck is the angle of the nut and jaw (see cut), by which the pressure of the screw toward the centre also presses the jaw firmly against the face of the Chuck, so the jaw can never tip up, holding the work more securely than any other chuck.

We make them both Independent and Universal; the screws in the Universal are geared in the centre, thus making the only chuck with a direct motion. The working parts are made of steel and wrought iron.

41/2	incl	h	\$ 15 ∞	20 inch	55 œ
6	••		20 00	24 "	70 00
9	**		25 ∞	28 "	90 00
12	••		30 00	30 " 1	00 00
15	••		35 ∞	36 "	50 00
+8	**		45.00		

D. E. WHITON'S CHUCKS.

WASHBURN'S CHUCKS.



CUSHMAN'S CHUCKS.

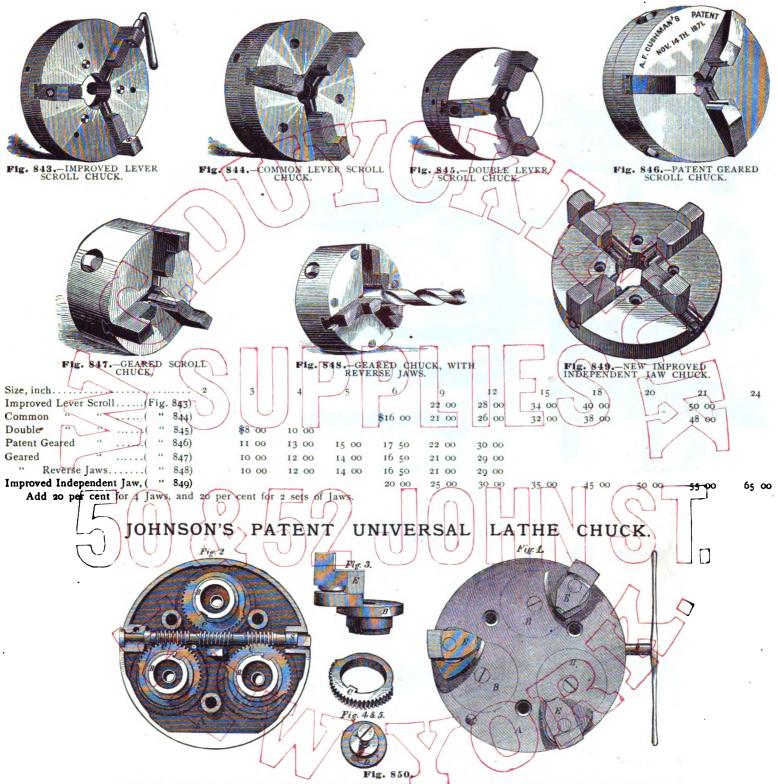


Fig. 1 is a face view, and represents the chuck ready for use. Fig. 2 is a section through the edge of the body, parallel with its face, the back part being removed to show the internal arrangement. Figs. 3, 4, and 5 are details of construction readily understood; the jaw E revolves upon a steel pin in the arm of wheel B, to which it is also tongued and grooved, but which, when turned to a certain position, can be removed therefrom at will. The toothed ring C has a solid feather, and is accurately fitted and forced to its seat upon B. The screw and plate D secure B in place. The worm shaft S is of cast steel. The toothed rings C C C and jaws E E E are of hammered iron, and are thoroughly case-hardened. The wrench P is well fitted and hardened. A small screw is inserted in the face of the chuck, to prevent running the wheels out unintentionally. A screw will also be found in the edge of the chuck for the purpose of oiling. It will be noticed that as the wheels revolve, the jaws adjust themselves to the work, and can be reversed or turned in any position at pleasure, and that this chuck is thereby adapted to a great variety of work. It will also hold from the smallest piece to the full size of the chuck, with a pressure that increases with the diameter of the work held, and is unequaled for firmness, durability, and adaptation to the general work of the machine shop.

INCLUDING WRENCH AND BOLTS.

7 inch\$25 00	13 inch	45 00	18 inch	65 00	24 inch 100 00
10 " 35 00	15 "	55 OO	21 "	80 oo	

LECOUNT'S PATENTS.

VICE CLAMP.

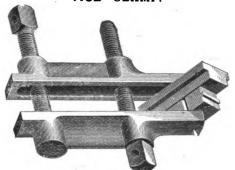


Fig.	351.
------	------

No.	1-OI	ening	1	inch							 						 ÷	1	23	
••	2	**	2	••															60	
••	٦	••	3	. * *						 								2	00	,

STEEL CLAMP DOG.

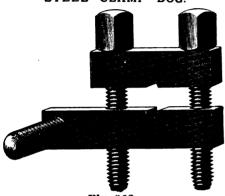
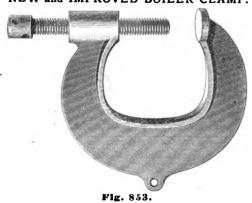


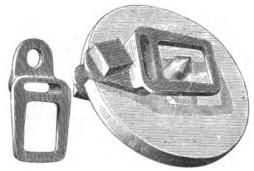
Fig. 852.

No.	1Opens	r inch		\$ 1 25
•••	2-	115 "		1 50
	3-	2		1 75
•••	4- "	3	**********	2 00

NEW and IMPROVED BOILER CLAMP.



BOLT DOG.



Flg. 854.

Set of twelve sizes, from 5-16 to 2 inches, inclusive. ... \$2 50

MACHINIST'S CLAMP.

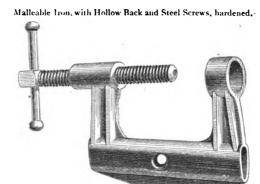


Fig. 855.

No	1-2	inch	 \$ 1	40	No. 4-5 inch \$2 0	o
**	23	**	 1	Ėο	" 5—6 " 2 20	0
**	2-4	**	 1	80	Set 0 00	n

STEEL CHUCK DRILL HOLDERS.



Fig. 856.

No.	1-1	`aking	Drills	from	3% to 9-16	\$ 0	50
	2-		**	••	0-16 to ¾		50
	,	••	**	••	34 to 1 1-18		60
	4-		••	**	1 1-18 to 1 5-8		7 5
	5-		**		1 5-8 to 2		90
Set.	• • • •					3	25

STEEL DOG WRENCH.



Fig. 857.

STEEL CLAMP.



0.	1-2 2-3 3-4	inch	1 	. \$1 50 . 1 75 . 2 00	No. 4-5 " 5-6 Set	inch	\$2 : . 2 : . 10 d
				DIE	DOGS.		

Fig. 850.

Vo.	1-0)per	15 1/2	inch	1	*:	25-1	Extra	Dies,	6.2
••	2	٠.	3/4	••		1	6c —	••	••	3.7
	3	**	1			2	α —	••	••	540
••	ŏ-	• •	1/4		Amateurs, or					
					thes		25	••	••	1.

When ordering Extra Dies, please state which you require, the V or Tongued.



MALLEABLE IRON CLAMP DOG.

Fig. 860.

HOLLOW LATHE DOG.



Fig. 861.

							Spine :	BV .				0.2.			
No	o	1	2	3	4	5	6	7	8	Q	10	11	12		
size, inch	14	% €	1/2	3/4	1	11/4	11/4	11/	2	24	•	214			6
Malleable Iron	≵ ∪ 35	35	40	50	60	75	90	1.00	1 10	1 25	1.50	7.70	7.00		
Casi Sicei		40	50	60	70	8<	05	1 10	1 20	1 40	* 60	* 80	• •	•	
set of 8 small sizes,	⅓8 to 2	inch in	clusive,	Mallea	ble Iro	n, \$5 (60 : Casi	Steel	\$6.20	—Full	Set of a	a small	sizes	34 10 .	inch
inclusive, Malle	eable Iro	n, \$12	∞ : Ca	st Steel	\$13 0 0	o.			Ψ- 3-		o	- .,	31213,	78 10 4	Iden,

SCREW CLAMPS, MALLEABLE IRON.

10 inches 4 7 25 8 20

PEARSON'S PATENT CLAMP.

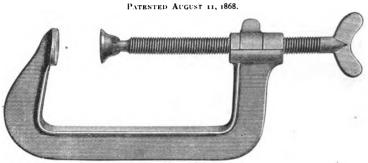


Fig. 864.

CLAMP, DIE, AND COMMON LATHE DOGS,

FORGED FROM BARYSTEEL AND HARDENED.



Fig. 865.—CLAMP DOG.

		11/4		between	screws,	50
		2),		••	••	50
Per	set	of	thr	ec		 50



Fig. 866.—DIE DOG. But one size of this toollis now made. Other sizes will be, should the trade demand. 1% inch between sides, \$3 00 Extra Dies, per pair. 50



COMMON DOG.

Four sizes of this tool are now manufactured.

••				\$ ⊙	60
**					70
•••					80
our 1 be	lar e r	ger ead	viz Iv f	es v	vill the
	our our		our larger	our larger size	our larger sizes v

PATENT MALLEABLE CLAMP.



Size opening, inches. 3
Per doz :: \$4 50

IMPROVED SCREW CLAMP.



Fig. 869.

No	. 1		3 in	ches,	per doze	n		 \$4 00
••	2		5	••			· •••·	 5 50
	3		7					
**	4	٠. ١)	**				 8 00

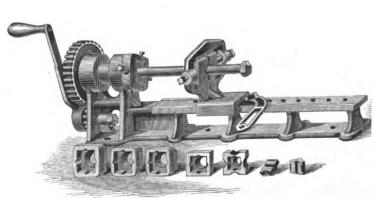
Combination Lathe, Dog-Clamp and Drill-Jig. Patent Lathe Dogs.



	Fig. 870.		
15	11/2 inches	\$1 25 No	1



HAND BOLT CUTTERS.



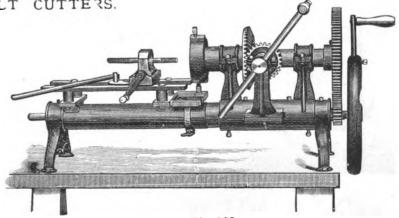


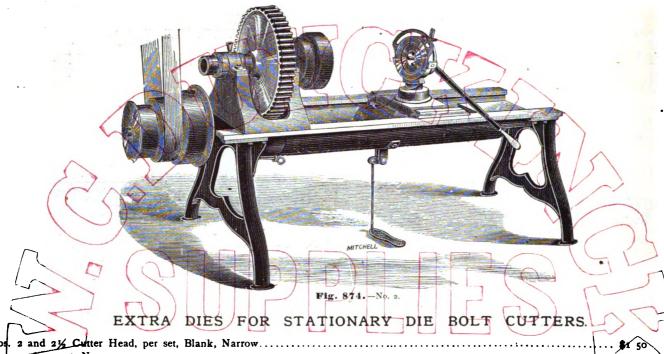
Fig. 873.

Taps and Dies extra.

Digitized by Google

SCHLENKERS' STATIONARY DIE BOLT CUTTERS.

No. 2 —With improved Chuck, including 8 sets Dies, 8 Master Taps for recutting Dies, Cone, Pulleys, C. S. and Hangers, and Nut Holder,	
cuts V Thread 3/2 to 11/2 inch	300 00
With extra Centre, including 3 sets Dies (3/8 to 1/4 inch) and 3 Master Taps	30 00
No. 21/2—With improved Chuck, including 11 sets Dies, 11 Master Taps, Countershaft, Parallel Vise and Nut Holder, has 2 Centres to Cutter	
Head, and cuts V Thread, ¾ to 2 inch, and Square Thread ¾ to 1½ inch, has Back Gear, and 7 different Speeds	400 00
No. 3 —With improved Chuck, 9 sets Dies, 9 Master Taps, Countershaft, and Parallel Vise, cuts V Thread 💥 to 2½ inch	500 OÒ
Centre to Cutter Head for Wide Dies, will cut V Thread to 3 inch, and Square Thread to 21/4, 3 sets Dies and 3 Master Taps, extra	100 00



For Nos. 2 and 2½ Cutter Head, per set, Blank, Narrow.

Cutting same, per set, Narrow.

75

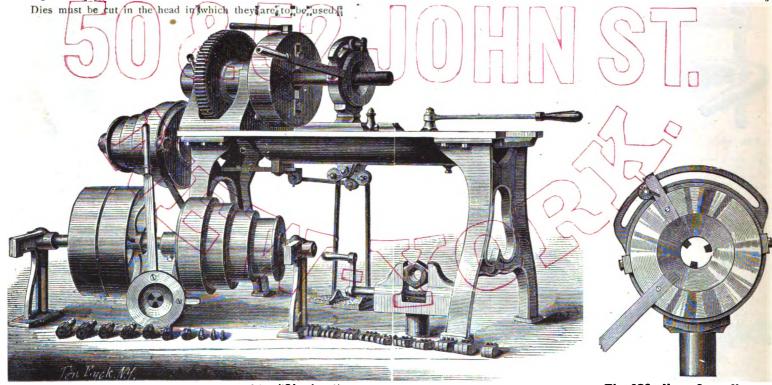
For No. 3 Cutter Head, per set, Blank, Narrow.

4 50

Cutting same, per set, Narrow.

1 00

1 50



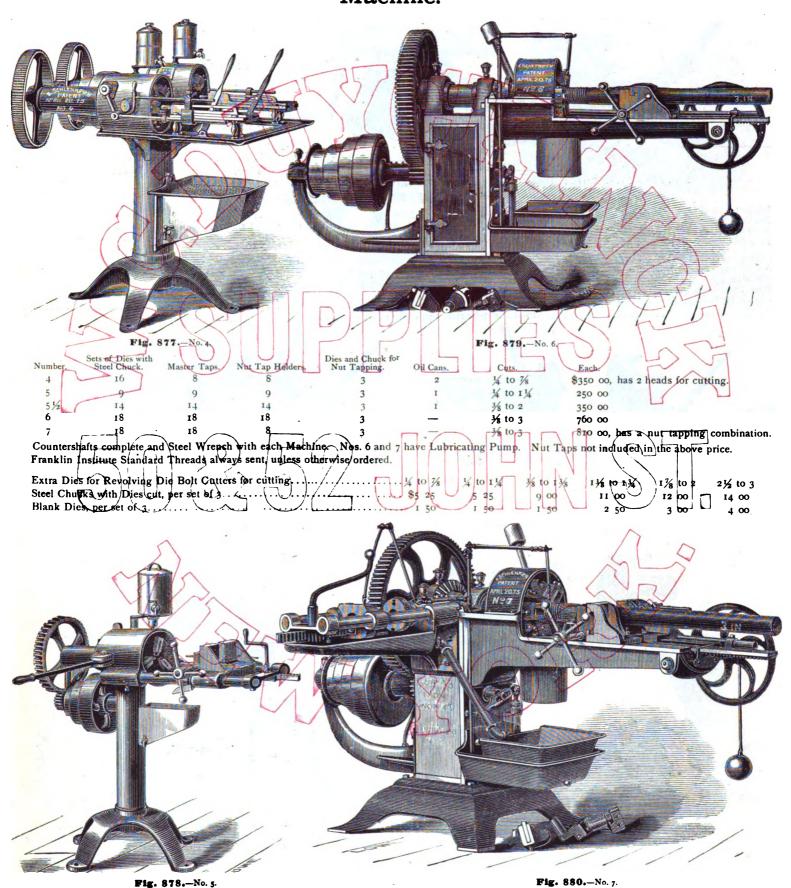
F4. 875.-No. 2%.

Fig. 876.-No. 3. CUTTER HEAD.

BOLT	CUTTER	HEADS	FOR	CUTTING	SQUARE	THREADS.

SCHLENKER'S AUTOMATIC

Revolving Die Double Headed Bolt Cutter and Nut Tapping Machine.



THE LIGHTNING BOLT CUTTERS AND NUT TAPPERS.

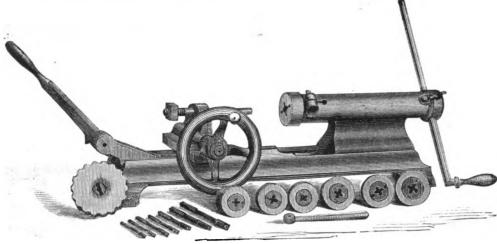






Fig. 882.-Die shown out of its Socket with its Screws.

No. o-Especially for crooked work. Made to be bolted to the bench or table. Fitted with seven sues from 1/4 to 3/4 inch. Usual assortment, 1/4, 5-16, 5, 7-16, ½, 5-8, and ¾ inch.

With Taps, Dies in Collets, etc., complete \$60 ... Collets, for extra Dies, each..... 10

DIES FOR MACHINES.

Diameter, inches	18 and 20 \$1 00	5-16 16 and 18 1 00	3/8 14 and 16 1 15 1 90	7-16 12, 14, and 16 1 30	1/2 12, 13, and 14 1 50 2 35	9-16 12 and 14 10 1 75	58 5, 11, and 12 1 90	11-16 11 and 12 2 10	34 10 2 35 3 75	15 1 10 2 60
Diameter, inch	9 and 10 \$3 00	15-16 9 3 40	3 7 5 0	ō	•		1 ½ 6 7 00 5 50	•	· · · · · · · · · · · · ·	13. 5 10.00

Threads of peculiar number and shape furnished at extra price, according to cost or agreement.

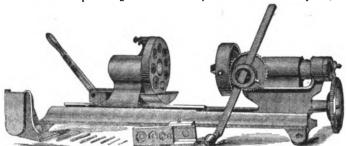


Fig. 883.-No. 1. BOLT CUTTER, NUT TAPPER, AND DRILL COMBINED. For the Bench or Table. Fitted with seven sizes, from 1/4 to 3/4 inch. Usual assortment, 1/4, 5-16, 1/8, 7-16, 1/2, 1/8, and 1/4 inch. Drill with Auto-

matic Feed. With Taps, Dies, Nut Chuck, and Drill Rest....

Fig. 884.-No. 11/2. BOLT CUTTERSAND NUTATAPPER.

For the Bench or Table. Fitted with seven sizes, from 3% to 1 inch, in clusive. Usual assortment, 3/8, 7-16, 1/2, 3/8, 3/4, 7/8, and 1 inch. All 1-32 over exact standard, unless otherwise ordered.

Complete, with Taps, Dies, Nut Chuck, etc.... If desired, we can furnish the following extra Tools with Nos. 1 1/2 and 2 1/2 Machines: Taps and Dies (in Collets) for Nuts and Bolts, 1/4 inch, \$2 75: 5-16

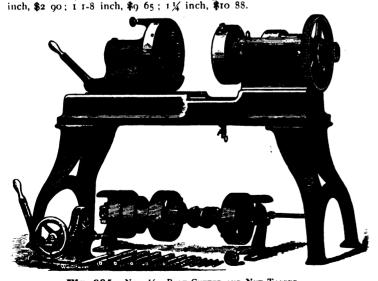


Fig. 885.—No. 51/2. BOLT CUTTER AND NUT TAPPER. Fitted with eleven sizes, from 3/8 to 11/2 inch. Usual assortment, 3/8. 7-16, ½, ¾, ¾, ¼, 1, 1½, 1¼, 1¾, and 1½ inch.

Complete, including Countershaft	\$350	οδ
13/4 inch Tap, Die, and Collet, when required	20	25

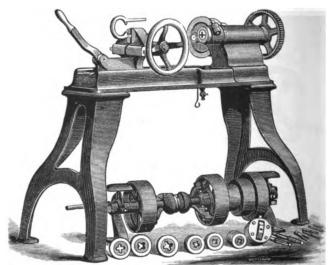
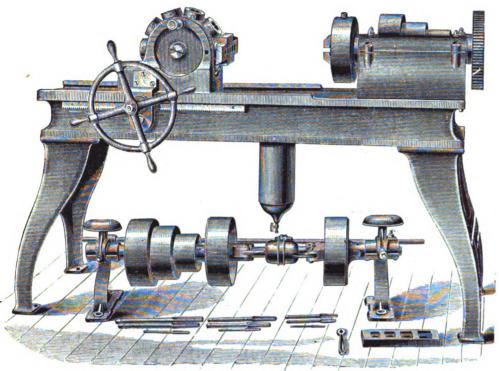
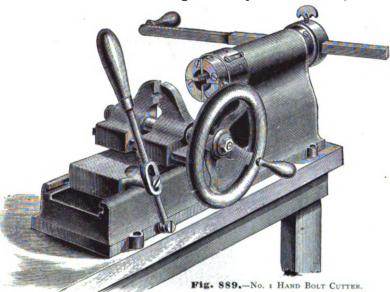


Fig. 886.-No. 40. BOLT CUTTER AND NUT TAPPER. Fitted with seven sizes, from 3/8 to 1 inch. Usual assortment, 3/2.7-16 1/2, 1/8, 3/4, 7/8, and I inch. With above Taps and Dies (in Collets), Nut Chuck, Countershaft,

GRANT'S PATENT BOLT CUTTERS.



-No. 3 POWER BOLT CUTTER.



٧o.	1	—С	uts B	olts ¾	to	*	inch	. 7	Taps	. a	nd	Die	5	\$65	00
••	2	_	**	₹	to	ī		7		••	••			115	00
**	2	_	••	36	to	ī	**	7			**	wit	h Legs.	125	00
••	21/	<u></u>	**	1/2	tσ	11/2	**	9		••	••			175	00
••	3	—I	ower	Cuts	Bol	ts }	⅓ to	ı i	nch,	7 7	ľap	s an	d Dies,	250	00
••			**	••		1	% to	11/4	**	0		**	**	350	00

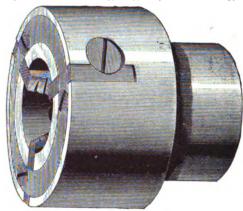


Fig. 888.

The above cut represents the dies that will be furnished with Nos. 1, 2, 21/2, 3, and 4 Bolt Cutters, inclusive. They consist of 3 chasers inserted in radial recesses in an iron disk or collet, held in place and bound together by a flat steel ring, which is let into the face of the collet and chasers, and secured to the collet by three screws. One chaser only is adjustable, and this one is adjusted and set by a substantial screw placed in the periphery of the collet. The other two chasers, held rigidly in one position by the ring, act as back rests, and cut to the size for which they are made, or according to the adjustment of the first chaser. The shanks of the

collet are slotted for key and bolt, or suitably prepared for a set screw, by which they are held and secured in place in their respective machines.

The dies cut clean, full threads rapidly, in once passing over the bolt, and finish the threads as well as they are usually finished in an engine lathe.

The chasers, when dull, may be quickly removed from the collet, and ground on an ordinary grindstone, and thus be kept sharp till worn out. If the chasers are cleaned after grinding, and put back in the slots in the collet (also clean) according to their numbers, no trouble about adjustment can possibly arise.

The dies for No. 1 and larger die stocks differ from the above only in the size and form of the collet, their shanks being short and finished in a way to guide the bolt while being cut, and allow chips to pass out without clogging the die.

Die Stock No	Ţ		2	3	4
Weight, ounces	12		40		
Each			5 00	7 00	12 00
Box	1 00		1 35	2 25	2 75
Collet, with Ring and Screws, for Die Stock	No	1	2	3	4
Weight, ounces		6	19		
Each	\$	1 10	1 30	1 70	1 90

Collet, with Ring and Screws, for Bolt Cutter Dies r inch and smaller, weight, 48 to 55 Collet, with Ring and Screws, for Bolt Cutter Dies 11/8 to 11/2 inch, weight, ounces. 2 20

GRANT'S IMPROVED DIE STOCK AND DIE.



No. o Die-Stock is designed for jewelers, model makers, and machinists. It is furnished with 6 taps and dies, cutting such threads as may be ordered for 1-16 to 🕱 inch sizes, and with a handle and chuck for holding taps. Price, complete in box, \$

No. 1 is furnished with 5 taps and dies for cutting rough nuts and iron of the following sizes and number of threads: 1/4, 20; 5-16, 18; 3/4, 16; 7-16, 14; 1/3, 13. Price, complete in box, \$16 oo. No. 2 is furnished with 6 taps and dies; sizes and threads as follows: 5-16, 18; 16; 7-16, 14; 14, 13; 14, 11; 14, 10. Price, complete in box, \$25 oo. 14 inch dies can be furnished for use

No. 3 is furnished with 5 taps and dies; sizes and threads as follows: 1/4, 13; 1/4, 10; 1/4, 10; 1/4, 9; 1, 8. Price, complete in box, \$32 00.

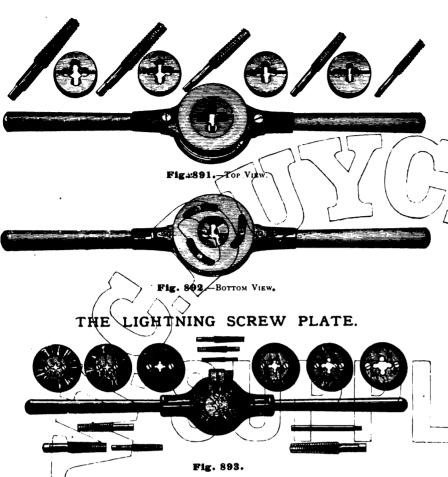
No. 4 is furnished with 7 taps and dies; sizes and threads as follows: 1/4, 10; 1/4, 19; 1 inch, 8; 1/4, 7; 1/4, 7; 1/4, 6; 1/2, 6. Price, complete in box, \$60 00.

Dies and taps will be furnished for threading pipe and fittings as follows: for No. 2 Die Stock, 1/4, 1/4, 1/4 inch sizes; for No. 3 Die Stock, 1/4, 1/4, 1/4, 1/4 inch sizes; for No. 3 Die Stock, 1/4, 1/4, 1/4, 1/4 inch sizes; for No. 4 Die Stock, 1/4, 1/4, 1/4 inch sizes; for No. 5 Die Stock, 1/4, 1/4, 1/4 inch sizes; for No. 6 Die Stock, 1/4, 1/4, 1/4 inch sizes; for No. 7 Die Stock, 1/4, 1/4, 1/4 inch sizes; for No. 8 Die Stock, 1/4, 1/4, 1/4 inch sizes; for No. 9 Die Stock, 1/4, 1/4, 1/4 inch sizes; for No. 9 Die Stock, 1/4, 1/4 inch sizes; for No. 9 Die Stock, 1/4, 1/4 inch sizes; for No. 9 Die Stock, 1/4, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for No. 9 Die Stock, 1/4 inch sizes; for N 1/2, 1/4, 1, 1/4 inch sizes.

CHASERS FOR DIE STOCK, BOLT CUTTER, AND PIPE	CHASERS	DIE STOCK, BOLT (CUTTER,	AND	PIPE	DIES.
----------------------------------------------	---------	-------------------	---------	-----	------	-------

Size, inch	×	5-16	₹	7-16	34	9-16	₹8	11-16	*	3%	1	11/6	11/4	13%	11/2
Single Chasers	\$ 0 40	40	45	50	55	6 o	65	70	75	85	95	1 00	1 05	1 10	1 15
In Sets of three	1 00	1 00	1 10 .	1 25	1 40	1 55	1 70	1 90	2 00	2 30	2 6 0	2 75	2 90	3 05	3 15

REECE'S PATENT IMPROVED HAND BOLT CUTTERS OR SCREW PLATES.



The threads are perfectly finished at a single cut. Nuts and bolts always correspond without trying and fitting.

The Dies are not solid, but in two pieces, and adjustable for wear, so as to keep the exact size of the taps notwithstanding long use. When used up they can be replaced from our stock at any time, the plate and holders or collets remaining good.

ASSORTMENT-A, STOCK to INCH. LONG. Taper or Plug Taps, Dies, Guides, Stock, etc., for the following sizes, in inches:

3-16, 34, 5-16, 36, 7-16, complete in Case \$10 00 To above may be added Die for 1/8 inch pipe.. 1 30

ASSORTMENT B, STOCK 23 LNCH. LONG.

Taper Taps, Dies, Holders, Stock, etc., of the following sizes, in inches:

14, 5-16, 36, 7-16, 1/2, 5/8, 1/4, in Case \$25, 00 To above may be added 3-16 inch or any intermediate sizes, at list prices below; also the following

PIPE DIES AND HOLDERS.

S AND HOLDERS.

. ½ ¾ ½ ½
\$2 25 2 65 3 10 (4 50 Size, in inches...... 1/4 *

The Pipe Dies are a superior article, adjustable on same principle as the bolt dies.

ASSORTMENT C, STOCK 26 INCH. LONG. Taper Taps, Dies, Holders, Stock, etc., of the follow-

ing sizes, in inches: 36, 7-16, 1/2, 58, 1/4, 3/6, 1, in Case..... \$32 75

To above may be added 3-16, 1/4, 5-16 inch, or any intermediate sizes, at list prices given below; also the same assortment of pipe dies and holders as held in size B, given above.

ASSORTMENT D, STOCK 53 INCH. LONG. Taper Taps, Dies, Holders, Stock, etc., of the following sizes, in inches:

To above may be added any intermediate sizes at prices given herewith, and also the following

PIPE DIES AND COLLETS IN D PLATES. **\$**3 35 4 75 6 00

LIST OF PRICES, SEPARATELY, OF DIES, ETC., FOR LIGHTNING PLATES.

Sizes, in	Number Threads	Dies, each without	each, with
Inches.	to inches.	Collets.	out Collets
*	18 and 20	\$1 00	\$ 1 50
5-16	16 and 18	100	
₹	15 and 16	1 15	190
7-16	12, 14 and 16	1 30	ĺ
1/2	12, 13 and 14	1 50	2 35
9-16	12 and 14	1 75	1
>5%	10, 11 and 12	1 90	
11-16	11 and 12	2 10	
34	[] 10	2 35	3 75
13-16	1 / 10	260	}
36	g and 10	3 bo	
15-16	9 /	3 40	
1	8	3 75	5 00
11/4	7 and 8	4 40	
11/4	7	5 ∞	5 50
13%	6	5 75	5 50
11/2	6	7 00	5 50 -

Sizes B and C. Plate, \$4 00; Collets, 75 cents each.

Size D. Plate, \$10 00; Collets, \$1 00 each.

Unless otherwise ordered, we fit the Lightning Plates with taps and dies for rough iron 1-64th over standard size for all sizes 7-16 inch and under, and for all larger sizes 1-32d over.

Collets for Bit Brace same price as for the Lightning Screw Plate.

No. 1 Screw Plate has five sizes of taps and dies, namely-1/6, 5-32.) 7-32, and 1/2 inch. We furnish the complete set, with tap holder, \$5 oo.

Prices separately, of Taps and Dies for our No. 1 Plate, which may be ---

Size, in inches	1/8	5-32	3-16	7-32
No. of Threads to inch	40	36	32	28
Hand Taps\$0	35	35	35	35
Dies	40	40	40	40
Diseasing		7'	11-14	

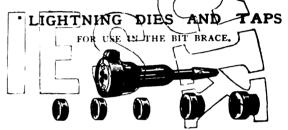
Other threads and sizes to fit the above Plate will be furnished at rea-

No. 2 SCREW PLATE has five sizes of Taps and Dies, namely- 1/4, 34 16, and Linch. This Plate has our Patent Adjustable Guide attached. plete Set. \$15/00.

Prices separately of Taps and Dies for No. 2 Plate : Sizes, in Inches..... 1/4 5-16 7-16 No. of Threads to inch. . 18 16 14 Hand Faps 55 60 70 Dies 100 1 15
Plate alone with Patent Adjustable Guide 115 / Dies.......... 1 15 1 30

No. 3 SCREW PLATE can be furnished with all sizes from 1/2 to 1 inch. We furnish to complete with Taps and Dies for the following four size. 34, and 1 inch. This Plate is also furnished with our Patent Adjustable 6 with our Patent Adjustable Gas

Prices separately of Tabland and Dies for No. 3 Plate Sizes, in inches.....9-16 15-16 No. of Threads to in. 12 11 2 00 Hand Taps...... \$0 90 1 ∞ 3 40 Dies 1 75 1 90 Plate alone with Patent Adjustable Guide



| Fig. 894

Sizes in inches Die Tap and Holder, compl	ele \$ 2	25 2 25	5-16 2 80	2
Die only		50 100	1 00 55	1
			4)
			1.25	
	71.00			

Figs. 894 Complete with taps and dies, sizes, in inches 3-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, ½, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20, 5-16, 20

Suited either for straight or crooked work. Dies are adapted for use in bit brace or in a common stock.

EXPLANATION OF PATENT DIE.

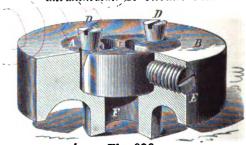


Fig. 896.

A, Die; B, Collet; D, Taper Screws regulating the cut; E, Binding Screws F, Guide for Bolts.

In adjusting the die the binding screws E are first slackened, and the site required fixed by moving the taper-headed screws DD in or out; after which the binding screws E are set very tight the last thing.

One of these dies should last two or three years in constant use with proper treatment.

MORSE TWIST DRILL CO.'S SCREW PLATE AND DIES. For the use of model makers and jewelers, cutting 1/8, 48- , 5-32, 40- , 3-16, 32- , 7-32, 24- , 14, 20- . No. 1-Screw Plate, with 5 pairs of Dies and 5 Taps..... \$5 25 Single pair of Dies, each..... The above set complete, including Plate, Dies, Taps, and Adjustable Wrench..... 7 25 Fig. 897. PATENT ADJUSTABLE TAP WRENCH. Fitting Taps from 1/8 to 1/4 in., inclusive, \$2 25 Fitting Taps from 1/4 to 5/8 in., " "Reamers " 1/4 to 18 " Taps " ½ to 1 " Reamers 3∕8 to 1 **½** to 1¼ " Taps 11 to 116 " Reamers " Fig. 898. SCREW PLATES WITHOUT DIES. SCREW PLATES. Single Dies, Size Size A.........\$5 00 Size A, with 3 pairs of Dies, cutting 120, B.... 816, 112 00 Size B, with 4 pairs of Dies, cutting $\frac{316}{8}$, $\frac{112}{2}$, $\frac{511}{8}$, $\frac{310}{4}$. WITH ONE, TWO, OR THREE PAIRS OF DIES. Screw Plates can have the following sizes of Size C, with 4 pairs of Dies, cutting 112, Size A..... \$2 50 | Size C... " B..... 3 25 " D...... Size D, with 4 pairs of Dies, cutting 79 14 to 5/8 C 3% to I D... 18 to 13/2 Dies extra. 18, 187, 147...... 13 00 PRENTICE FORGED SCREW DROP DIES. PLATES AND No. 1-5 Pairs of Single Dies for No. 1-16 No. 3.... 2 00 00 9-16 34 10 00

	mana	Junium.	17 12 may 19 19 19 19 19 19 19 19 19 19 19 19 19		mmmm	mm			aaama	immini)
Fig. 900,				_	D1.—PLUG.			Fig. 909.—	SOTTOMING.	
		lanufactured ei	` '		, Pratt & Whitney, TUTE SHAPE					
· Unless advised to the	contrary, w	e fil) orders	with V Th	ا کسر	4 5 /9-16		11/16	<i>✓</i> 3∕	13-16	<i>7</i> ∕8
Length, inch No. of Threads to inch	2 11-16	27/8	27 16, a 18	35%	4 % 4 ½ \ 3, & 14 12 & 14	10, 11, 11	5 1/8	5 % 10, 11, & 12	5 13-16 10	6 9 & 10
Each		50 I 50	55 1 65	60	79 80	90 2 70	I 05 3 I5	1 20 3 60	1 40 4 20	1 60 4 80
Diameter, inch	15-16	1	1 1/8	11/4	13/8	11/2	1 5%	134	1 7/8	2
Length, "	61/8 9	6 ½ 8	65∕8 7 æ}8	6 <i>7</i> %	7¼ 6	7 % 6	81/8 5 & 51/2	8 11-16	9 3-16 4½ & 5	934
Each	\$ 1 80	2 00	2 25	2 60	3 00	3 50	4 20	5 , 00	5 80	4½ 6 70
Per Set	5 40	6 00	6 75 -	7 80	9 00	10 50	12 60	15 00	17 40	20 10

11/8 15 00

MACHINISTS' HAND TAPS.

Screw Plate, alone, No. 1...

We keep in stock the above 1-32 over size for rough iron.

2---5

3---5

In ordering, always state exact diameter and thread wanted.

1/2

. 13-16 7/8

15-16

When exact duplicates are wanted, special orders should always be accompanied by a stub with nut fitting same. Hubs or Master Taps are 25 per cent higher than Nut Taps. State, in ordering, whether for solid or open dies.

3.... 6 50

MACHINE OR NUT TAPS...

V or Franklin Institute Shape of Thread. Long Shank-Patent Relieved.

'Unless advised to the contrary, we fill orders with \ Threads.

Diameter, in.	Length, in.	No. of Threads to inch.	Each.
<i>1</i> 4	41/2	16, 18, and 20	\$ o 6o
5-16	5 1/8	16 and 18	70
₹8	5¾	14 and 16	So
7-16	63/8	12, 14, and 16	90
1/2	7	12, 13, and 14	1 00
9-16	75%	12 and 14	1 15
5/8	81/8	10, 11, and 12	1 30
11-16	87/8	11 and 12	I 45
*	91/2	10	1 60
13-16	101/8	10	1 8o
7∕8	11 1-16	9 and 10	2 10
15-16	11 11-16	9	2 40
1	12	8	2 80
1 1/8	125%	7 and 8	3 20
11/4	1314	, 7 and 8	3 70
1 3/8	137/8	. 6	4 20
1 1/2	141/2	6	4 70
1 5/8	151/8	5 and 51/2	5 30
134	1534	5	6 00
1 7/8	163/8	41/2 and 5	6 80
2	17	41/2	7 70





Fig. 903.-To Fit Brace.



Fig. 904.

Diameter, in.	Wire Gauge No.	No. of	Threads to inc	h.	Each.	Pe:
7-64	4	•/	36 and	40	₹ 0 35	\$4 -
9-64	6	30,	32, 36, and	40	35	1
1/8		30,	32, 36, and	48	35	1.
5-32	8		30 and	32	35	4.5
3-16	10		20, 22, and	24	35	4 1
7-32	12		20, 22, and	24	35	4 ~
1/4	14	16, 18,	20, 22 and	24	38	4 .
17-64	16	16,	18, 20, and	22	38	4 4
9-32	18		16, 18, and	20	38	4.45
5-16	20		16, 18, and	20	45	5 %
3/8	24		14, 16, and	18	45	5 3

All orders for less than half a dozen of a size at single price.

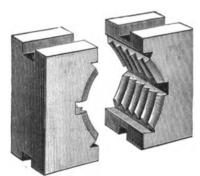
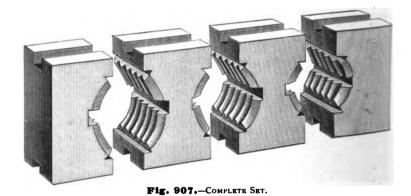


Fig. 906.—PAIR OF DIES.



BLACKSMITHS' EXTRA TAPER AND PLUG TAPS.

DUT	HD	IN	DOVEC

14 T			PUT U	P IN BOXE	s.		
		Size, inch.	No. of Threads to inch, Right Hand.	Taps in each Box.	No. of Threads to inch, Left Hand.	Taps in each Box.	Each Tap
		1/8	30 and 32	6			\$ 0 30
		3-16	24, 26, and 28	6			30
		*	18, 20, 22, 24, and 26	6			30
 		5-16	16, 18, 20, and 22	6			30
		3∕8	12, 14, 16, and 18	6			35
		7-16	12, 14, 16, and 18	6	14	6	40
		1/2	12, 14, and 16	6	12 and 14	4	40
		9-16	12 and 14	6	12	4	50
		5%	10, 12, and 14	6	10 and 12	4	50
		*	7, 8, 9, 10, and 12	6	10 and 12	4	65
		7/8	9 and 10	4.	9	4	90
		ı	7, 8, and 9	2	8 and 9	2	1 25
	75	11/4	6, 7, 8, and 9	2	8 and 9	2	1 75
08.	Fig. 908	. 1½	6, 7, and 8	2	6, 7, and 8	2	3 00

EXTRA DIES.

(Figs. 906 and 907.)

	ζ.	r. igs.	, you a	uiu ye	7.,			
For No	o. 1 of 2 S	tock	.			•••	 \$ 12	α
"	3 or 4	"				• • •	 10	œ
"	5 or 51/2	"			· · · ·	• • • •	 8	oc
"	6	44					 6	oc
"	7 or 9	"		. .			 3	50
**	11 or 15	"				• • •	 3	00
"	17 or 19	"					 2	50
"	21 or 23	••				· · • ·	 2	00
**	25, 27, or	32 :	Stock				 2	25
"	33 Stock.						 1	50
**	34 " .						 2	00
"	35, 37, 38,	41,	or 4:	2 Sto	ck		 1	50
"	45 or 47 S	toc	k				 2	•
"	49 or 51	"					 2	00
"	53	**	· • •			• • • •	 1	50

Digitized by Google

BLACKSMITHS' STOCKS AND DIES.

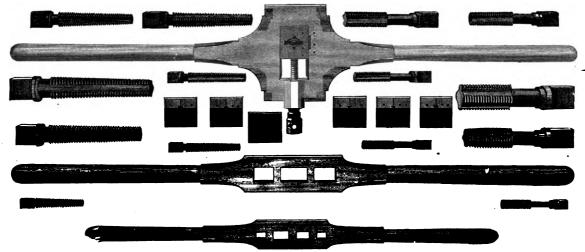
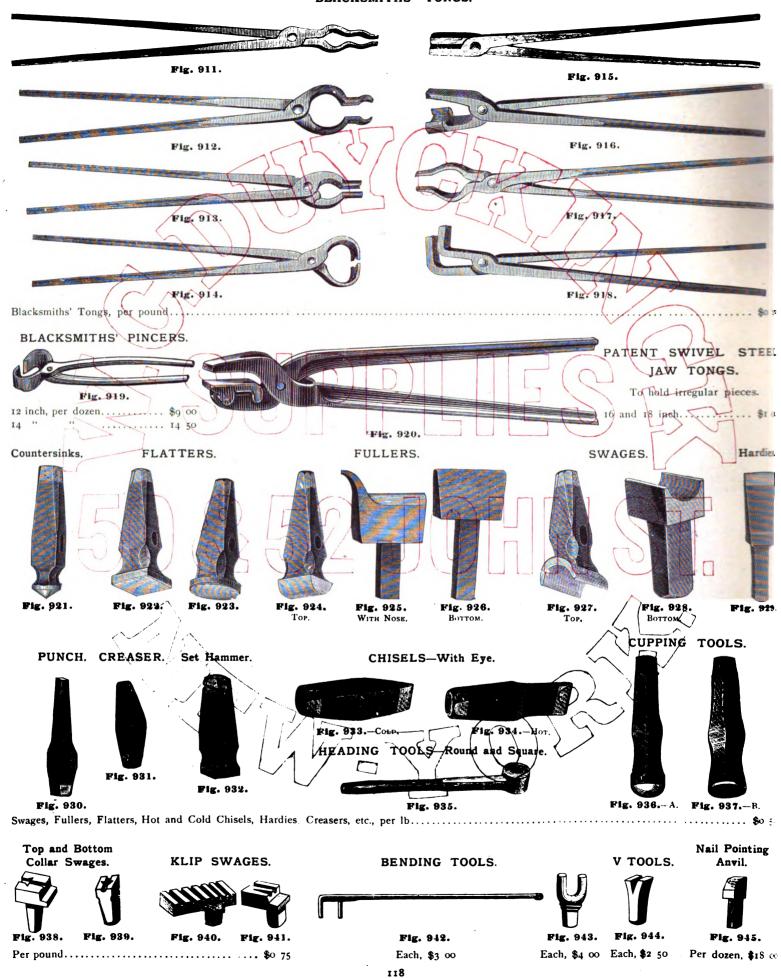
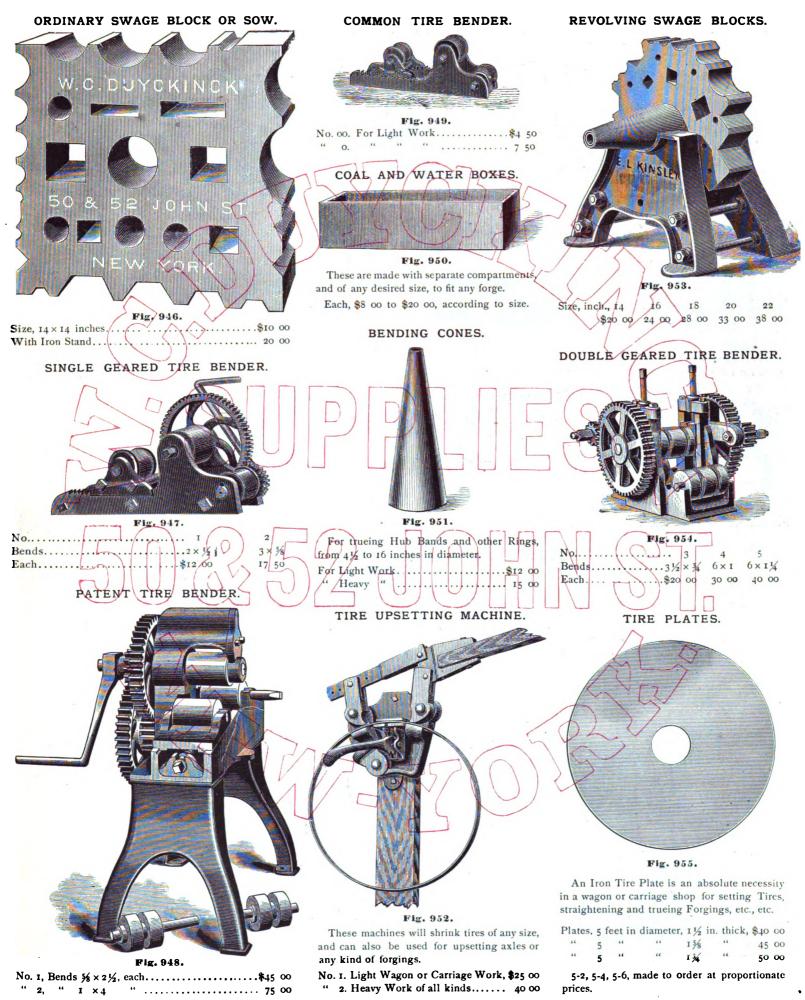


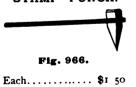
Fig. 910

No.	I.	{ Cuts	2 2	inche	s to	ı inch	Right Left	Hand,	4½ a			s to th	e incl	h, 8 Taj	ps and	4 Pairs	of Die	es		· • • • • • • •)	\$ 60 00
No.	2.	Cut	3 2	inche				t Hand				thread	is to	the incl	h, 8 Ta		4 Pairs	s of Di	es				60 00
No.	3.	(Cuts		k inc	h to		h Righ		l. 6 ar	18 bi					s and a	4 Pairs o	of Dies	s				. . <u>)</u>	45 00
No.	4.	Cut	3 1	inc		•					nd 9 ?	Threads	s to t	-		-						-	45 00
No.	5.	{ Cuts	1			¾ inc ¾ "				nd g	threads	to the	inch	, 8 Tap:	s and a	4 Pairs o							35 00
·No.	5 /	½. Cuts	1	4 inc			Righ	t Hand			nd 9 T	hreads	to th	e inch,			Pairs o	of Dies					35 OO
No.	6.	{ Cuts	1	¼ ind ⅓	h to	ı inch	Right Left	Hand,		eads "	to the	inch, 4	Таря	s and 2	Sets o							}	20 00
No.	7.	{ Cuts	1 1				h Righ Left	t Hand	i, 8 ar 8	ot be	thread.	is to th	e inc	h, 6 Ta			of Di	es				}	12 00
No.	9.	Cuts	1	inc	h to	½ incl	Righ	t Hand	l, 8, 10	o, and	l 12 th	reads t	o the	inch, 6	Taps	and 3 Pa	airs of	f Dies.					12 00
No.	11.	{ Cuts	1,		h to		h Righ Left	t Hand	l, 8 an 8	d Io	thread	ls to th	e incl	h, 4 Taj	ps and	3 Sets o							10 00
No.	15.		-												-	_							10 00
No.	17.	{ Cuts	I	inch	to ½		Right I Left		9 and 9	12 tl	reads "			6 Taps 6 "	and 3	Pairs of							9 00
No.	19.								-						-	-						_	9 00
No.	21.	Cuts	I	inch	to 1/2 1/4				9 and 9	I2 tl	ireads	to the	inch,	4 Taps	and 3								6 o o
No.	23.	Cuts	. I	inch						and	14 thre	ads to	the in	nch, 3 🕽	-								5 00
No.	25.				to 3							ls to th	ie inc				of Di	ies			. 	}	6 5 0
No.	27.	Cuts	34	inch	•	-	Right	Hand,	10, 12	ano	1 16 th	reads (o the	inch, 6	Taps	and 3 P	Pairs of	f Dies.			• • • • • •		6 50
No.	32 .	∫ Cuts	* **	inch		inch	Right Left	Hand,	IO an			ls to th	e incl			4 Sets 0	of Dies				• • • • • • • • • • • • • • • • • • •		5 00
No.	33.	∫ Cuts	** **	inch		inch	Right Left	Hand,	10 th 10	reads "	to the		2 Tap 2 "	s and	2 Sets 2 "	of Dies.						}	4 00
No.	34.	Cuts	*	inch	to i	inch	Right	Hand,	10, 12	2, and	1 16 th	reads (o the	inch, 3	3 Taps	and 3 S	ets of	Dies					4 50
No.	-		, ,		.*	-	-			•				•	•						• • • • • • • • •		4 00
No.	37.		,-		•	•	-		• • •	•				-	•	-					• • • • • • • •		4 25
No.		1 "	₹	44	Ŷ	ਰ ਰ	Left	**	12		"	* **	**	΄6 " ⁻	**	3 "	44	• • • • • •			· • • • • • • • • • • • • • • • • • • •	· · · · · · · · · · · · · · · · · · ·	4 50
No.	41.																				• • • • • • • •		3 25
No.	42.	Cuts	1/2	"	1	g "	Left	"	14		"	"	**	6 "	"	3 "	"	• • • • • •		· · · · · · · · ·	• • • • • • • • • • • • • • • • • • • •	· · · · · · · · · · · · · · · · · · ·	3 50
No.	45.	\ Cuts	- 5/8 - 5/8				Right Left	Hand,	12 an	ıd 16	thread	s to th	e incl	h, 6 Ta	ps and	3 Pairs	of Die				· · • · · · · · · · · ·		5 50
No.	47.	Cuts	, •		•	•		Hand,	-	, and	l 18 th	reads t	o the	-	Taps	•	airs of			•		,	5 50
No.			1/2	inch	•	inch	_			-					ps and	-		es				.,)	4 50
No.	51.	Cuts	,-			.,		Hand,	14, 1	B, and	1 22 th	reads (to the	inch, 6	Taps	and 3 P	airs of	f Dies.					4 50
No.	53.	Cuts	10	inch	to T	6 inch	Right	Hand,	16, 20	0, 24,	and 3	2 threa	ds to	the inc	h, 4 T	aps and	4 Sets	of Die	es	• • • • • • •	. 	• • • • •	2 75
	E.	ra Stoc	bo.	and F)ies n	12011(2)	tured i	evnres	elv for	116 21	nd are	comple	te wit	h Plug :	and Ta	per Taps	Wren	nches e	tc				
NT .								•	•			-		_		•						•	
NO.			•	to 2 11 to 3/8	icnes,	Kignt	riand,	with I			o sets (יי ווי ies											50 00
**	5½ 9,	•		lo ¼		••	••	· I			7 "	44									• • • • • • • • • • • • • • • • • • •		75 00 50 00
• 1	-	" i		0 1/4		**	"	" 1	•	44	, 6 "	"									• • · • • • • • • • • • • • • • • • • •		35 00
" ;				0 1/4	••	**	"	"	8 "	• •	3 "	"								• • • • • • •	• • • • • • • • •		15 00
	•		. •	,,									117										• ·=

BLACKSMITHS' TONGS.









Each.... \$2 00

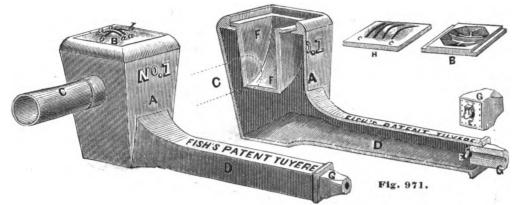
Fig. 968.



Per dozen..... \$7 50

Fig. 970.

ANVILS. EAGLE. Less than 100 lbs. 2 No..... o 1 3 7 Weighing about, lbs. 10 15 20 30 40 50 60 70 80 Each\$3 50 4 25 5 00 5 50 6 50 7 50 8 00 9 00 10 00 10 50 120



FISH'S

PATENT CHAMPION TUYERE IRONS.

SQUARE PATTERN TUYERE.



Fig. 972.

Fig. 972.\$1 25

HARRIS TUYERE.

PATOL FEB. 2157 1850

UPRIGHT TUYERE.

WATER TUYERE.



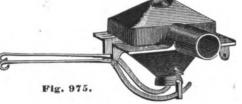
Fig. 978.

DUCK-NEST TUYERE.

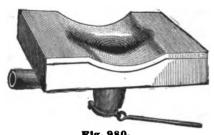


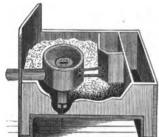
Fig. 979.

IMPROVED TUYERE IROÑS.



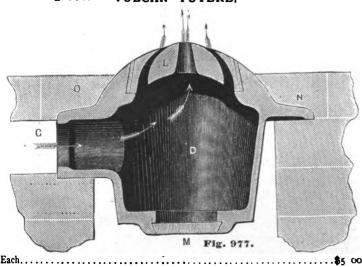
ROOTS' IMPROVED BLACKSMITH TUYERE.





BAYLISS' FORGE AND TUYERE.

Fig. 976. VULCAN TUYERE,



CHAPMAN'S IMPROVED WATER BACK TUYERE.

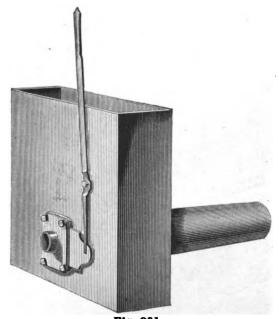
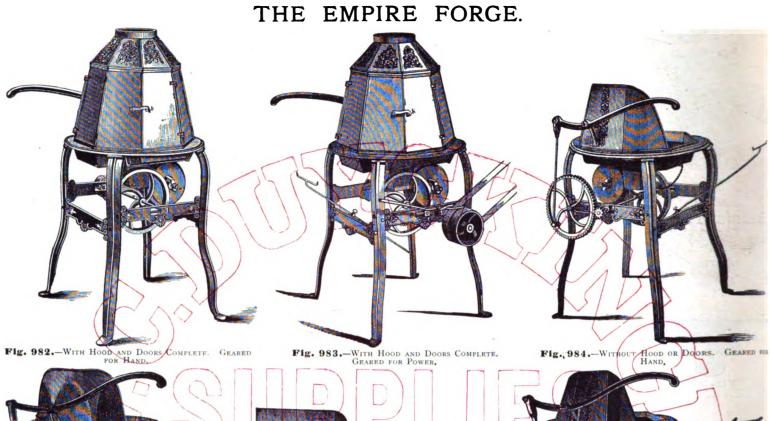


Fig. 981.



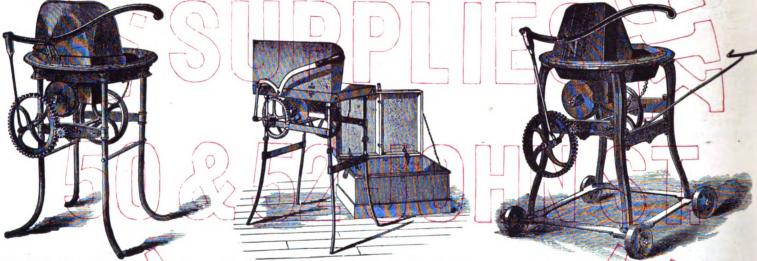


Fig. 985No. 10. WEIGHING ONLY DO LBS. Fig. 9:	86No. 15, OR ARMY FORG	E. FOR TRANSPORTATION	i.	Fi	987ON WEE	ELS.	
		E	MPIRE	FORGES/	7		
		WITH HO	OD AND	DOORS COM	PLETE. 7		
	GEA	RED FOR HAND.			GEARED FOR PO	WER.	
	No. Fan, in. Diam.	Height Weight, lbs.	Each.	Weight.			Each.
	0 7 I—10 1 7 2— I	3—10 160 4— 0 170	\$35 00	175 109			45 00
	2 8 2-3	4-3 270	50 00	290 4	········		. 55 00
	73 8 2-7	4-6 285	00 00	300 "			. 65 00
		WITH	DON TUO	DO OR DOOR	5.		
	GRA GRA	RED FOR MAND,			GEARED FOR PO	WER.	
	No. Fan in. Diam.	Height. Weight, lbs.	Eagh.	Weight.			Each.
	0 1 1-10	3-4	\$30 00				
	2 8 2	3 6 140 230	45 90				
	8 2-7	40 245	55 00	285 "			60 00
Q C		MC	OUNTED (ON WHEELS.			
	WITH HOOD	AND DOORS COMPLETE.			WITHOUT HOOD OR	DOORS.	
The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon	No. Fan, in. Diam.	Height. Weight, lbs.	Each.	No. Fan, in.	Diam. Height.	Weight, lbs.	Each.
	0 7 1—10	3—10 180	\$40 00	0 7	1-10 3-4	150	\$35 00
	1 7 2— I 2 8 2— 3	4 — 0 190 4 — 3 200	45 00 55 00	2 8	2- 1 3-6 2- 3 3-9	160 250	- 50 00
	3 8 2-7	4-6 305	65 00	3 8	2-7 4-0	265	60 00
	Section 10	N	lo. 15.—AR	MY FORGE.			
	7 inch Fan, 18x16 Fire P	an, 30 inches high, weighs	75 lbs., pack	ced in iron-bound	Chest		\$50 00
		No. 10.—WROUG	HT IRON	LEGS GRADE	D FOR HAND		
	: 1 P						Que 100
	7 inch Fan, 1 foot 8 inch	es in Diameter, Height, 3	ieet 2 inches	nigh, weighs 90 1	DS		\$2700
The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon		В	ENCH, WI	TH HOOD.			
	The Hood is only se	et on the Forge, and not at	tached to it.	It may be remo	ved at pleasure.		
A STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STA	Without Top,	7 inch Fan, 12x17 inch., 15	inch. high,	weighs 50 lbs			\$16 00
Fig. 988.—Bench, with Hood.	With " or Hood,	7 " 12X17 " 28		70			20 00

PATTERSON'S PATENTS.

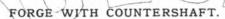
FORGE WITH HOOD FOR HAND POWER.

(Fig. 989.)

No. 1. Diameter, 22 in., Height, 27 in., \$48 oo "2." 29 " 29 " 65 oo

FORGE WITHOUT HOOD FOR HAND POWER.

No. 1. Diameter, 22 in Height, 27 in, \$49 00



(Fig. 001.)

					,	э.	3	4.	.,									
No.	I.	Witho	out	Но	00	1.				 	 				. 9	35	00	
4	2.	"		**							٠.					47	50	
**	ī.	With	Ho	od.										·		43	00	
**	2.	"	**													57	50	

COUNTERSHAFT.

No.	ı																\$6	00	
"	2																9	00	

DETACHED HAND WHEED

PATTERSON'S

FORGES WITHOUT BLOWERS.

(Figs. 992 and 993.)

The Tuyere is adjustable and can deliver a blast 3 inches in diameter without in the least clogging with clay. This can not be accomplished with any other Forge without infringing on Patterson's Patent.

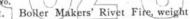


Fig. 990.

80 lbs., without Canopy......\$15 00
The same with Canopy..... 23 00

Horseshoeing Fire, weight 180 lbs., without Canopy...... 32 00

The same with Canopy...... 44 00 Carriage Makers' Fire, weight 250

5. Capacity for Heavy Work, weight
500 lbs., without Canopy...... 65 00

5½. Forge for Railroads, weight 650 lbs. without Canopy...... 77 00

6. Superion Capacity, weight 750 lbs., without Canopy...... 83 oo

GRATE FORGE FOR HARD COAL.

(Fig. 994.)

No.	I.	Weight	165	lbs								. 8	34	00	
**	2.	44	200	**									44	00	
**	2			**									56	00	
- 66	4.	4.6	540	66									70	00	

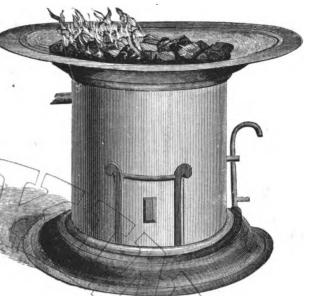


Fig. 992.-EXTERNAL

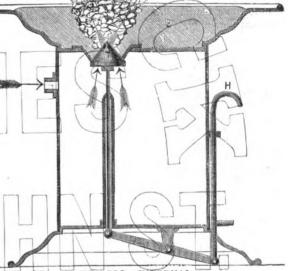
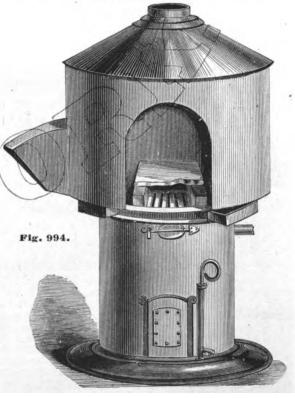


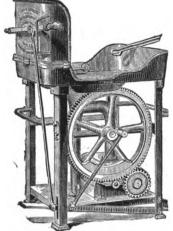
Fig. 993.-INTERNAL.



ROOT'S PATENTS.

NEW "LETTER A."

ROTARY HAND BLOWERS, FOR BLACKSMITHS' FIRES



The hearth is only 15 × 20 inches, and the height of same only 24 inches. Being so small, it is easily carried or transported from place to place, or can be easily taken on scaffolds, bridges or roofs; and being low, and the principal weight near the bottom, it can scarcely be upset.

New " Letter A "......\$43 00

Fig. 995.

We invite the special attention of Blacksmiths to the advantages of our little Hand Blower for Smiths' Shops.

Its great durability, being made of iron. Economy of room—only occupying about 18 inches square. Producing a force blast that can be varied instantly from the slightest breath to the strongest blast. Great saving of coal. More work can be done with the Blower than with the bellows. Operated more easily and pleasantly than the bellows; can be run by hand or power, and connected with any Tuyere.

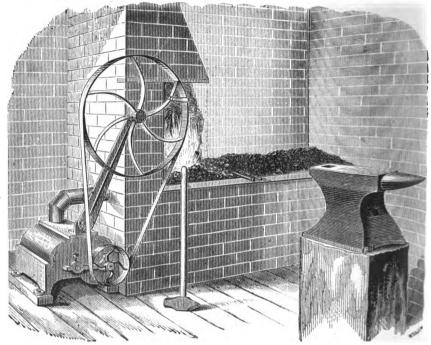
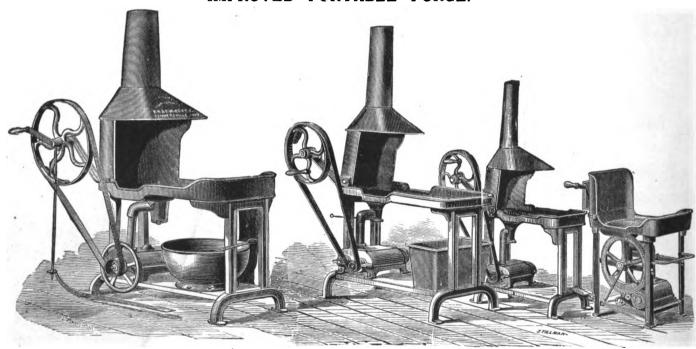


Fig. 996.

								ullet
No	. 1/2.	Blacksmith	Hand	Blower.	will furnis	sh ample	blast fo	r one ordinary fire by hand, or by power\$36 a
	. /•.					u po	Diast id	tone ordinary life by hand, or by power
••	I.	••	**	"	**	**		a large fire by hand, or two by power
								a large me by hand, of two by powers the street of the by hand, of two by powers the street of the by hand, of two by powers the street of the by hand, of two by powers the street of the by hand, of two by powers the street of the by hand, of two by powers the street of the by hand, of two by powers the street of the by hand, of two by powers the street of the by hand, of two by powers the street of the by hand, of two by powers the street of the by hand, of two by powers the street of the by hand, of two by powers the street of the by hand, of two by powers the street of the by hand, of two by powers the street of the by hand, of two by powers the street of the by hand, of two by powers the by the by hand, of two by powers the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the by the
••	2.		••	"	**	**	4.6	one largest class fire by hand, or three by power
			_					one targest class are by hand, or three by power transfer that the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the sta
**	3.	••	Power	٠٠ .	**	blast fo	or five fi	res135 @

IMPROVED PORTABLE FORGE.



No. 4. No. 3. No. 2. No. 1.

KEYSTONE FORGES.

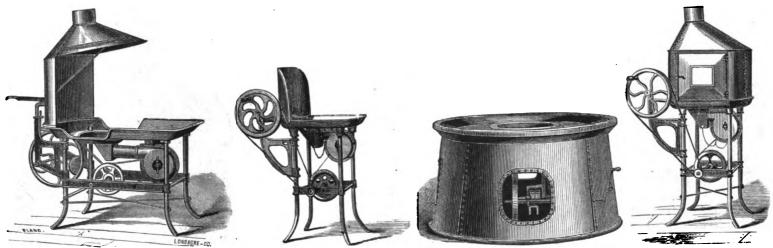


Fig. 998.—Forge No. 3, Lever and Hood.

Fig. 999.-Forge No. 2

Fig. 1000.—Power Forge No. 6.

Fig. 1001.—Jewelers' Forge No 2, Close Hood.

BLACKSMITE . ROTARY FORGES. No. 1 — Chain Gear.	Height in. 30	, Size of Fire Pan, in. 17X20	lbs. 85	Diam. of Fan, in	Each. \$27 00	No. 2½—With Lever	Height, in. 25 25 25 25 25 25 25 25	Size of Fire Pan, in. 21x27 21x27 21x27 21x27 24x30 24x30 24x30	lbs. 140 150 150 160 150 160	Diam. of Fan, in. 8 8 8 8 9 9	Each 50 00 53 00 55 00 60 00 63 00 66 00
" I —With Hood	30 30 30	17X20 17X20 17X20 20X24	95 88 98 98	6 6 8	30 00 30 00 33 00 35 00	" 3 — " " " Chain Gear " 4 — Chain Gear " 4 — With Hood, Chain Gear	25 25 25	24×30 30×40 30×40	170 195 210 .	9 9 9	69 00 70 00 78 00
2 — Chain Gear 2 — With Hood 2 — " Chain Gear 2½ — Chain Gear 2½ — With Hood 2½ — " Chain Gear 3 — Chain Gear 3 — With Hood 3 — With Hood 3 — " Chain Gear	30 30 30 25 25 25 25 25 25 25 25 25	20X24 20X24 20X24 21X27 21X27 21X27 21X27 24X30 24X30 24X30	108 104 114 130 140 150 140 150 150	8 8 8 8 8 9 9 9	38 00 40 00 43 00 45 00 48 00 50 00 53 00 50 00 55 00 55 00 55 00	POWER FORGES. No. 2½—Power, with Hood	25 25 25 25 25 25 22 22	21X27 21X27 24X30 24X30 30X40 30X54 54X54	140 150 150 160 210 550 600	8 8 9 9 9	50 00 52 00 60 00 62 00 75 00 145 00 160 00
STATIONARY BLAST FORGES. Stationary Blast Forge	25 25	40×40 40×40	160 200		30 00 35 00	No. I—With Close Hood	30 30	17X20 17X20 20X24 20X24	94 104 110 120	6 8 8	34 00 37 00 45 00 48 00
FARRIERS' FORGES.	-3		-00		3 5 44	No. 1—Chain Gear Riveting Forge, Chain Gear	30 30	17X20 20X24	95 108 200	6 8 9	30 00 38 00 75 00
Farriers' Forge	25 25 25 25	30 30 30	320 330 350 360	9 9 9	50 00 53 00 60 00 63 00	NAVY AND MINERS' FORGES. Miners' Forge, Chain Gear	22	16x22 22x27	100	6 9	50 00 80 00



Fig. 1003.

QUEEN'S PATENT PORTABLE FORGE AND BELLOWS.

BLAC	CKSMI	THS	FORGI	S.

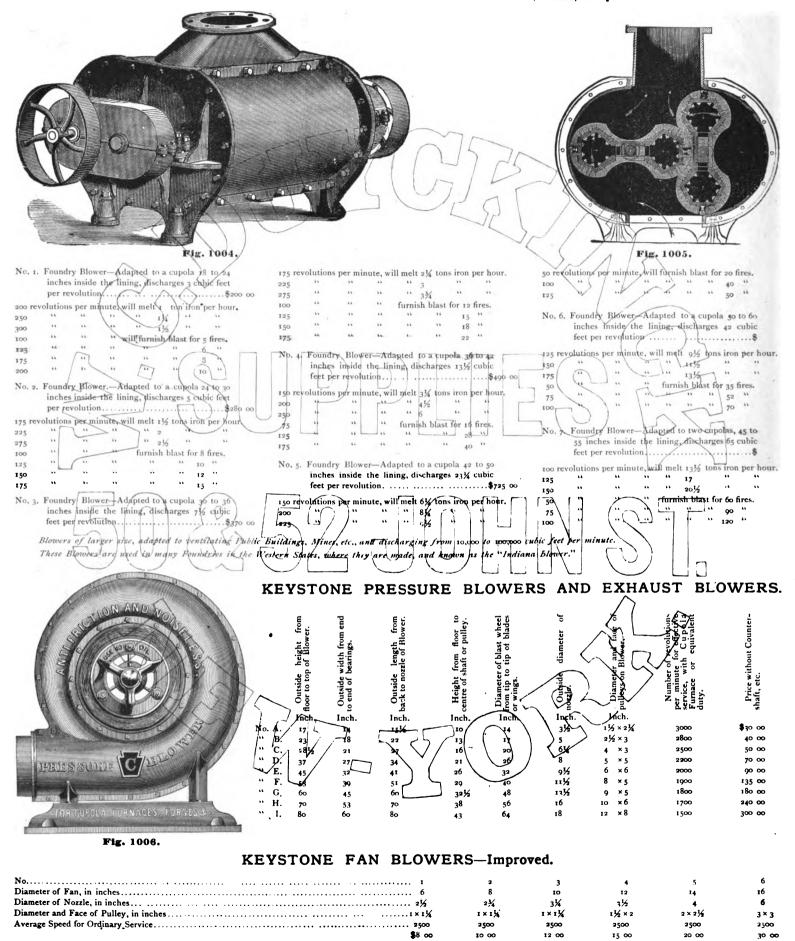
No.	. 0	— os	ibs.,	1	toot	8	inches	ın l	Jiameter, 🥫	i iect	10	inches	hig	h					. 520	00
••	A	-135	••	1		Q	**			٠٠.	11	••	••						. 32	00
٠.	1	-205	**	2	••	•	**	••		· "	2	••							. 42	00
**	114	-245	**	2	••	2	**	••		•••	5	**	••							00
**	2	-335	••	2	**	6	44	**		• • •	Š.	**	••						63	00
••	3	-44 5	••	3	••		••	••			10	••	••						78	00
						•		JEV	VELERS'	FOI	RG	ES.								
No.	0	-105	lbs									 .							28	00
••	Α.	-145	" .			٠.						 .	. .				٠,.		- 34	ဘ
••	ı	-230	٠٠ .						<i></i>								٠		44	00
••	11/2	28o	٠٠.			٠.									. .				54	00
**	2	385	٠٠.			 65	00
	The	e No.	o Fo	nge	s are	n	ade wi	thou	t slides for	closi	ıg,	and wit	hou	t Wa	ter	Tr	oug	hs.	_	
				•							•						_			



Fig. 1008.

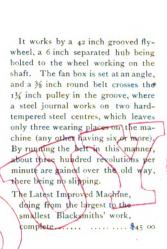
ROOT'S PATENT FORCE BLAST ROTARY BLOWERS.

FOR FOUNDRIES, BLACKSMITH SHOPS, VENTILATING BUILDINGS, MINES, ETC.



THE TRANSMITTING POWER FORGE BLAST.

BRASS FOUNDERS' MELTING FURNACE.



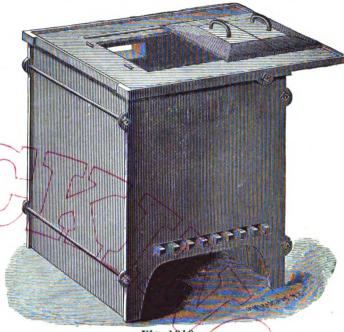


Fig. 1010.

BRASS FOUNDERS' DRYING STOVE



Fig. 1007.

Size, in. 21 Each. \$e1 00 25 00 30 00 35 00

Fig. 1011, In three sections, top and bottom complete...... The top fits any section, and the sections fit into each other. This stove makes an excel-lent cabinet maker's stove.

BRASS FOUNDERS' FLASKS.

12/2 x16 4 inches inside......

ORDINARY OR COMMON BELLOWS.

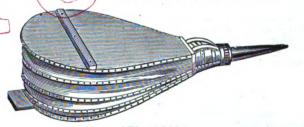


			Fig.	1012.			
Size, inch	18 to 22	24	26	28	30	32	34
Each	\$8 50	9 00	10 00	11 00	12 00	14 00	16 00
Size, inch	36	38	40	42	44		
Each	\$18 00	20 00	23 00	27 00	32 00		

ECLIPSE FAN BLOWER.



The Improved Eclipse Fan Blower is so arranged that it can be set to any smith or forge fire, right or left hand side, as the fan case, with outlet, can readily, by loosening bolts, be thrown to the right or left side and in any desired position, and can be turned in either direction with the same result, a good strong blast. The crank can, by loosening handle nuts, be thrown forward as shown in cut, or back to dotted line, making it very convenient to be used with or without a helper.

Floor space, 12x20 inches, weight, 100 lbs..... \$30 00

Fig. 1009.

STURTEVANT BLOWERS.

Owing to probable changes in lists and patterns, particulars must be deferred until close of this book.

THE IMPROVED MACKENZIE PATENT BLOWER.

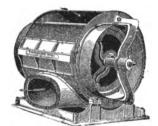


Fig. 1013.

They will melt as follows, with the Mackenzie Cupola:

Exhaust Fans same price as Single Pressure Blowers.

- No. 3 will supply Blast for Cupolas from 1 to 3 tons per hour capacity, with 2 to 3 horse power.
- No. 4 will supply Blast for Cupolas from 3 to 5 tons per hour capacity, with 3 to 4 horse power.

durable, noiseless, and will melt faster and with less power in old style cupolas than any other Blower in use.

- No. 3 will supply Blast for Old Style Cupolas to 30 inches in diameter, with
- 3 to 3½ horse power.

 No. 4 will supply Blast for Old Style Cupolas from 30 to 36 inches in diameter, with 3½ to 5 horse power.
- No. 5 will supply Blast for Cupolas from 5 to 10 tons per hour capacity, with 4 to 6 horse power.
- No. 6 will supply Blast for Cupolas from 10 to 15 tons per hour capacity, with 6 to 7 horse power.
- These Blowers deliver a force blast, and require but little power, as their speed does not exceed one hundred revolutions per minute. They are very
 - No. 5 will supply Blast for Old Style Cupolas from 36 to 48 inches in diam-
 - eter, with 5 to 7 horse power.

 No. 6 will supply Blast for Old Style Cupolas from 48 to 60 inches in diameter, with 7 to 8 horse power.

6 615 00 690 00 Each..... \$350 00 450 00

CLARK'S PATENT BLOWER.

•													
SINGLE PRESSI	JRE	BLOW	ERS—I	For Smi	ths' Fire	es, Fo	orges, a	and Rol	ling Mi	ills.			
Letter	Α	В	C	D	E	F	G	Н	ī	1	K	L	M
Number of Smiths' Fires	3	5	12	18	28	38	52	68	88	112	136	161	192
Square feet of Grate Surface	2	5	13	20	26	40	50	71	88	100	136	172	210
Revolutions per minute	3000	2300	1870	1575	1400	1200	1070	965	850	808	747	700	650
Each	\$20 00	25 00	50 00	75 00	100 00	125 00	150 00	1800	225 0	o 250 oc	325 00	400 00	500 00
SINGLI	E PR	ESSUR:	E BL	OWER	S-For	Cupol	a Furn	aces.					
Letter	С	C	:	D	D		E		F	F		G	G
Diameter of Cupola, inch	25	20		33	38		43		47	52		60	68
Revolutions per minute		3280	•	3150	3150		2800	26	30	2630	23	390	2390
Tons melted per hour	. 2	-	21/2	31/2	4!	/2	6		7	8 1/2	ź	íi	141/2
Each	\$50 00	50 0	xo o	75 00	75 00		100 00	125	00	125 00	150	oo ·	150 00
DOUBLE PRESSURE BLOWERS-For Smiths' Fires, Forges, and Rolling Mills.													
Letter	В	С	D	Е	F		G	Н	I	ĭ	K	L	M
Number of Smiths' Fires	5	r2	18	28	_		52	68	88	112	136	164	192
Square feet of Grate Surface	3	-7	8	11	30		50	71	88	100	136	172	210
Revolutions per minute	2200	1600	1250	1100	980		88o	788	690	658	610	567	530
Each	35 00	65 00	100 0	0 150 O	o 188 c	O 22	5 00 2	263 OO (337 00	375 00	488 00	600 00	700 00
DOUBLE PRESSURE BLOWERS—For Cupola Furnaces.													
Letter	C	(С	. D	• [)	E		F	F	(G	G
Diameter of Cupola, inch	25		!g	33	3		43		47	52	(óo	68
Revolutions per minute		292	•	2330	2330		2260	2	190	2190	196	56	1)66
Tons melted per hour	2	•	21/2	31/2		11/2	6		7	8 1/2		II	141/2
Pressure of Blast for Speeds for Single and Double	12	1.	4	17	20)	20		20	20		20	20
Blowers in terms of a column of water, inch \(\) Each	the m		-	100 00	100	00	150 0	n 18	8 00	188 00	22	5 00	225 00
Each	\$ 05 00	۷5	00	100 00	100	•	150 0	~ 10	0 00			,	22, 00
SINGLE PRESSURI	BL	OWERS	For	Boiler I	Fires, V	entila	tion an	d Dr y ir	g Purp	oses.			
Letter	Α	В	С	D	E	F	G	Н	. 1	ī	K	L	M
Square feet of grate surface	2	5	13	20	26	10	50	71	88	100	136	172	210
Revolutions per minute			1600	1250	1100	980	880	788	600	658	610	567	530
Cubic feet per minute		_	1200	1800	2500	5000	8000	11000	13000	16000	19000	22500	25000
Each\$		25 00 5	50 00	75 OO	100 00 1	25 00	150 00	180 00	225 00	250 00	325 00	400 00	500 00
			-			-	-						
QUADRU	PLE	PRESSI	URE 1	BLOW	ERS-F	or Cu	pola Fi	urnaces	•				
Letter	<u>.</u>			G	н		ī	ī	K		L	M	N
Diameter of Cupola in inches				21	25		20	33	38		_ 43	47	52
Revolutions per minute				1500	1400	14	00	1400	1400		oo	1200	1100
Tons melted per hour	 .			1 1/2	2		21/2	31/2	4	1/2	6	7	81/2
Pressure of blast in terms of a column of water, inch				12	14	`	17	20	20	•	20	20	20
Each				135 00	160 oc) 18	35 o o	210 00	235	00 27	0 0 0	310 00	350 00

SQUARE TROWELS.

	_	-			_	
Fi	g.	1	0	1	4.	

Inches 4	41/2	5	5 1/2	0
I\$6 oo	6 75	7 50	8 25	900
11/4 7 50	8 25	9 00	9 75	10 50
11/2 9 00	9 75	10 50	11 25	12 00
134 10 50	11 25	12 00	12 75	13 50
2 12 00	12 75	13 50	14 25	15 00

LIFTERS.

				.	•					
Fig. 1015.										
Inches 10	12	14	16	18	20					
¥ · · · · · \$5 25	6 00	6 75								
3/8 6 oc	6 75	7 50	8 25							
1/2 6 75	7 50	8 25	9 00							
⅓	8 25	9 00	9 75	10 50						
*	9 00	9 75	10 50	II 25						
7/8	9 75	10 50	II 25	12 00	12 7					
I	10 50	11 25	12 00	12 75	13 5					
				_						

FLANGE LIFTERS.

Fig. 1016.

Size, in	ch	7% × 18	1 × 20
Per doz		19 50	21 00
	HEART AND S	QUARE.	



Size, inch.. 11/ 11/2 Per doz....\$6 00 7 50 9 00 10 50 12 00

HEART TROWEL.



Fig. 1018.

Size, inch 2	2 4	21/2	21/4	3
Per doz\$6 oc	7 50	9 00	10 50	12 00

TAPER ROUND POINT.

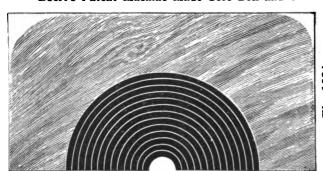


Size, inch I

Per doz	.\$6 75	8 25	.9 75

PATTERN MAKERS' SHRINKAGE RULES.

Ebert's Patent Machine Made Core Box and Corner Fillets.



and cheaper than those zes, varying from 1/4 to 3 in nd, ready for use, in any l

MOLDERS' TOOLS.

HALF ROUND CORNER.



Size, in... I 1½ 1½ 1¾ 2 Per doz. \$6 00 6 75 7 50 8 25 9 00 Fig. 1020.

IFLANGES.



Fig. 1021.

FLAT FLANGE. CIRCULAR FLANGE. Size, in... 3/ I Size, in... 3/ I Per doz.. \$15 00 18 00 Per doz.. \$16 50 19 50 FLAT AND CIRCULAR FLANGE.

FLANGE AND BEAD.



Size, inch... Per doz......\$12 00 15 00

DOUBLE SQUARE END.



Fig. 1023.

Size, inch.. 1/2 6 00 6 75 8 25 Per doz. \$5 25

SQUARE STRAIGHT.

Size, inch.. 1/2 Per doz..\$6 oo 7 50 6 75

SQUARE CORNER.



Size, inch... 2 Per doz......\$7 50 9 00 Fig. 1024.

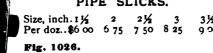
BEAD SLICKS.



Fig. 1025.

Size, inch	1/2	%	*
Per doz	\$ 6 75	7 50	8 25

PIPE SLICKS.



YANKEE.



Per doz...\$6 00 6 25 7 50

OVAL DOG TAIL.



Size, inch. 1 11/ Per doz. \$7 50 9 00 Fig. 1028.

CRUCIBLES.



number. All sizes, 5 cts. per numb About 2 lbs. metal to e: number crucible.



SPOON SLICKS.



Fig. 1031.

SPOON. 3/8 5/8 7/8 7 50 8 25 9 00 Size, inch....I * 11/2 Per doz.....\$7 50 9 00

FOUNDRY or MOLDERS' BELLOWS.



Fig. 1032.

Size, in.. 9 Doz. .\$15 00 17 00 20 00 24 00 26 00 28 00 33 00

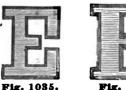
MOLDERS' RIDDLES.



Fig. 1088.

Diameter, inch 16	18	20
Brass, per doz\$15 00	17 00	19 00
Steel, " 11 00	14 00	15 00
Galvanized, per doz 9 00	11 00	13 00
Iron, " 7 00	9 00	11 00

METALLIC MOLDING LETTERS AND FIGURES, FOR FOUNDRYMEN, MACHINISTS, AND PATTERN MAKERS.



Each....\$0 04 4 4 4 5 5

FLAT FACE GOTHIC.

Fig. 1036.

ROMAN.





ROUND FACE GOTHIC.

Fig. 1038. ROMAN REVERSED

The above cuts are full size * inch letters.

ANY OF THE ABOVE STYLE. 14 15 36 18 12 18 18 14 16 17 11 11 11 2 3 4 4 5 5 5 6 6 7 7 8 10 12 15 17 Size, inch.... 1/8 1/6

MOLDERS' SHOVELS.

SOLID CAST STEEL, SQUARE POINT-Size 2.

BrandAmes.	Treadwell.	Blair.	Carter.	Sanderson.	Rowland.
Per doz	17 00	16 00	14 00	11 00	14 50

STEEL CASTING BRUSHES.



T. TWO I LOUD	Fig.	1039,
---------------	------	-------

3 in	nch	wire,	4	rows,	per doz.,	\$ 6	00	2	inch	wire, 4	rows	per doz.,	\$ 5	50
			5	**	"	7	50	2		4 \ <u>`</u>	"	·	6	50
2 1/2	•	•	5	"	. "	7	00		~ .		· ·	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		



Pla 1010

3 inc	h wire,	4 rows, per doz.,	\$6 00	2 inch wire	, 5 rows, per doz.,	\$ 6 50
3	"	2	4 00	2 "	4 " "	5 50
21/2	,"	5 -4 / 4	7 00	2 3 " (3	4 00

WAXING BRUSH.

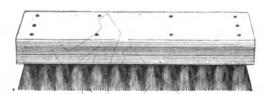


Fig. 1042.

Per dozen..... \$6 00 to 12 or

RATTAN BROOMS

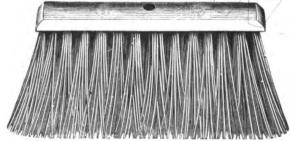


Fig. 1043.

Inch 12	14	τ6
Per doz \$10 00	11 00	12 00
Extra Brooms made to order.		

HARD BRISTLE BRUSH.



	O.	

Per dozei	en	\$7 0 0
**	extra	8 00

SOFT BRISTLE BRUSH.



Per doze	n	,		 	 /	 	\$ 6	00
**	extra		Ś	 	 . / .		Q	~

FACTORY DUSTERS,



Fig.	1046.
------	-------

No. 1, per doz	···· \$ 9 00	No. 2, per doz	; \$ 1	2 00
No. 3, extra, for I	oundry purpos	es, per doz	\$27 OO	•

BENCH BRUSHES.



Fig. 1047

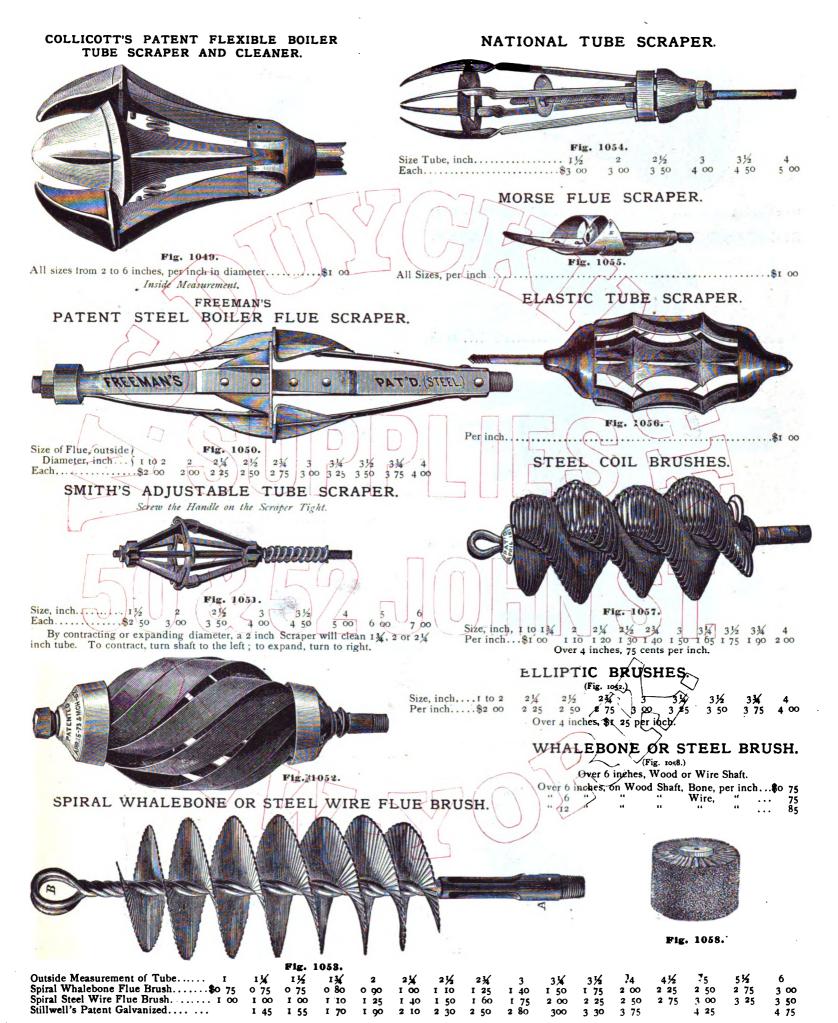
No	. I. pe	r de	7					ENAM No						ėc.	~
"	2,		, .L	• • •	• • • •		7 25	"	4,	a			· • • • •	. 10	00
								LES, E							
No	. o, pe	r do	z			\$	7 50	No.	3, pe	er do	z			\$12	25
**	1,	"					8 25	44	4,	4.4			a	15	00
	2,								/7					_	
F	EXTRA	Н	AVY	BR	USH,			N OUT			H WI	TE	BRIST	rles	•
No.	5, pe	r do	oz			. \$1	1 50	No	. 8, p	er d	oz/.			\$ 18	00
"								("							
							-				/				

STEEL BROOMS.



Fig. 1048.

12 inch block,	7 ir	ich wi	re, 4	rows,	per doz	 \$14 00
14 "	7	"	4	**	u	 16 00
16 "	7	**	4	**	"	 18 00
Upright Broom	1, 7	"	2	••	"	 12 00



SPENCER'S STEEL BRUSH FLUE CLEANER.

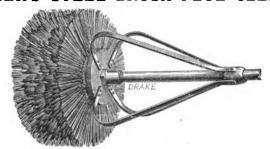


Fig. 1059.

SPENCER'S STEEL BRUSH TUBE CLEANER.

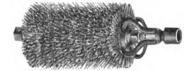


Fig. 1060.

Up to 6 inches, per inch...... \$1 00

CAR WINDOW'BRUSHES.

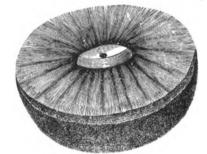


Fig. 1061.

No. o, per doz., \$9 00 No. 1, per doz., \$12 00 No. 2, per doz., \$16 00

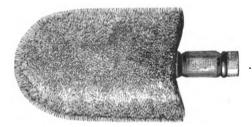


Fig. 1062.

No. 0, per doz., \$12 00 No. 1, per doz., \$16 00 No. 2, per doz., \$20 00 Poles for above, 6, 8, 10, and 12 feet.

CAR OR WINDOW WASHERS.

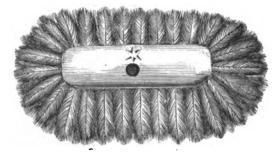


Fig. 1063.

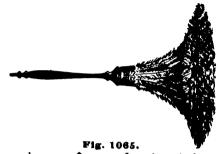
McLAUGHLIN'S PATENT CAR WASHER.



Fig. 1064.

No.	ı,	10	inch	diameter,	per	dozen	\$36	00
**	2.	8	••	•	••		24	00
••	3.	6	**		**		20	O O

FEATHER DUSTERS.



					ıg.	LUGS.		.				
Length,	4	inch.,	per doz.	\$2	00	Length,	12	inch.,	per o	doz	\$ 36	O
"	5	**	"	3	00	"	14	44	٠.,		45	œ
**	6	. "	••	6	00	44	16	**	"			
**	7	**	"	9	00	**	18	44	"			
**	8	**	**	13	00	44	20	44	**			_
"	9	• •	44	19	00	44	22	**	• •		-	_
**	10	, "	**	21	တ	64	24	**	. 46			

STEEL WIRE LOCOMOTIVE SNOW AND TRACK BROOMS.

No. 1, Plain...... \$36 00

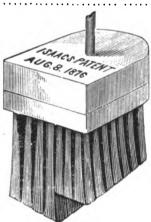
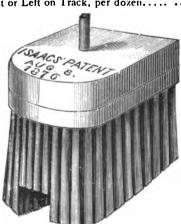


Fig. 1066.
No. 2—To Fit Right or Left on Track, per dozen.... \$40 or



DUDGEON'S ROLLER TUBE EXPANDER.



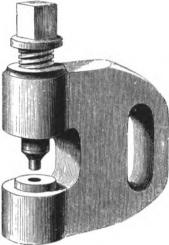
Fig. 1068.

Size, inch. 1 1½ 1½ 1¾ 15x 2 2½ 2½ 2½ 3¾ 3 3½ 3½ 4 4½ 5 6 7

\$20 20 25 25 30 35 42 48 55 60 70 85 100 120 130 180

These dimensions refer to the external diameter of tube.

BOILER PUNCH.





BALL FACED HAMMERS.

Solid Cast Steel, per lb.

Fig. 1070.

BOILER MAKERS' RIVETING HAMMERS.



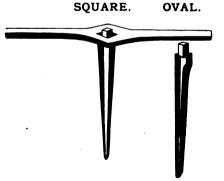
Fig. 1069.

HAND RIVET.

SETS ASSORTED.



Fig. 1072. per lb



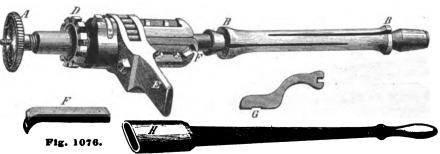
Per Set

Fig. 1073. Fig. 1074.

EYE REAMER.

Fig. 1075.

PATENT TUBE CUTTER.



PROSSER'S PATENTS.

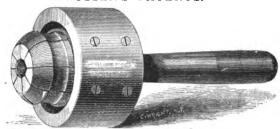


Fig. 1077.-PATENT GUIDE RING TUBE EXPANDER.

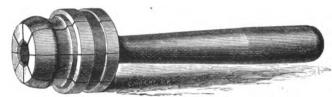


Fig. 1078.—PATENT SPRING TUBE EXPANDER.

	\$14 00	16 ∞	18 00	20 00	25 00	30 00	35 00
Spring Expanders, each \$10 ∞	10 00	12 00	1500	15 00	1800	20 00	25 00
Outside Diameter of Tube, inch. 3	31/4	31/2	4	41/2	5	6	7
Guide Ring Expanders, each\$40 ∞	45 00	50 00	60 oo	70 ∞	75 OO	100 00	130 00
Spring Expanders, each 30 00	35 00	40 00	45 00	50 00	55 00	80 00	100 00

CUTTER DRILL.



Fig. 1079.

REAMER-COUNTERSINK.



Fig. 1080.

Outside Diameter of Tube, inch 1 13	11/2	13/4	2	21/4	21/2	23/4
3-Cutter Drills, each			\$20 00	25 00	30 00	35 ∞
Pair Reamer Countersinks and Stock	-	\$ 15 ∞	1800	20 00	23 00	35 00 25 00
Outside Diameter of Tube, inch 3	314	31/2	4	5	6	7
3-Cutter Drills, each\$40 00	45 00	50 00	60 oo	75 ∞	100 00	130 00
Pair Reamer Countersinks and Stock 30 00	35 €	40 00	45 00	50 00	60 00	80 0 0
I arge ones made	ie to o	der				



DUDGEON'S PATENT HYDRAULIC PUNCHES.

WITHOUT VALVES OR THE FORCE PUMP GENERALLY USED.

00		olts	or b	rivets	5%	iron for	1/4	o punch
00	8o			••	1/8	••	34	٠.
00	100		•	**	5%	**	1/2	**
	120		•		34	••	1/2	**
	150		٠	**	32	•••	*	••
			•	**	3%	•••	34	**

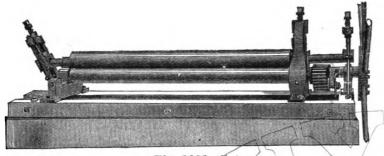
Fig. 1081.

(Fig. 1075.)

This tool is intended for cutting off the ends of boiler tubes, after being placed in the boiler and expanded at one end; but when the form of the boiler does not admit of this, they can be measured and cut to their proper length before they are put into their places.

The Cutter is made of two sizes, namely-

TEAL'S IMPROVED BOILER ROLLS.



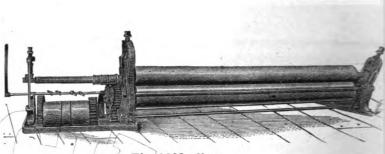


Fig. 1082. No. 1.

Fig. 1083.-No. 2.

The above cuts represent Hand and Steam Power Bending Rolls of the most improved pattern arranged for removing work from the end of top roll. For this purpose there is a yoke, hinged at the bottom, and having the roll bearing so constructed that when the yoke is swung down it will clear the journal.

At the extreme opposite end of the machine is an auxiliary bearing, which is forced down by means of a screw upon the lengthened shaft of the roll, and supports it while the yoke bearing is

No. 1. HAND POWER ROLLS.

Are driven by a "Spider" on one bottom roll shaft, which is lengthened for the purpose. The other bottom roll is adjustable sidewise, power being communicated to it through expansion gears This machine is mounted on a heavy wooden frame, and will bend 5-16 inch iron.

Machines for bending 5 feet wide..... \$250 00 275 00

Fig. 1084.

No. 2. STEAM POWER ROLLS.

Steam Power Rolls are back geared like a machinist's lathe, and are provided with 24 inch pulleys for 4 inch straight and cross belts for turning in either direction, which pulleys have thirty-seven revolutions to one revolution of rolls in six and eight feet machines, and fifty-four revolutions to one revolution of rolls in ten and twelve feet machines. Bottom rolls, which are of cast iron are driven. Top roll is of wrought fron, and of less diameter for bending small circles. The belt shifter works on trunnions, and is provided with a latch for holding the belts where they are put. Capacity, 1/2 inch iron.

Machines for bending 6 feet wide

No. 3. HAND AND STEAM POWER ROLLS.

This machine is driven by a worm and worm gear, with forty revolutions of worm to one revolution of rolls. Pulleys are on the worm shaft, and are 24 inch diameter for 3 inch straight and cross belts, which are worked by the "lock" shifter, as described in Power Rolls. Each end of the worm shaft is provided with a crank for hand power. The entite machine is mounted on a heavy wooden frame, requiring no foundation in putting up.

This and all our patterns of rolls are provided with swiver bearings in the yoke and housing, for bending

Bottom rolls, like Power Machine, are of cast iron, top roll is of wrought iron. Capacity, 1/2 inch iron. Machines for bending 5 feet wide...... \$475 ∞ Machines for bending 7 feet wide.. \$550 00

This size for hand power only, a reduction of \$30 00 on each size.

ROLLS FOR LIGHT MATERIAL.

19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00 19 00

BOILER ROLLS FOR HAND OR POWER.

HAND LEVER BOILER SHEET ROLLS.

With or without being geared, bending sheets 4 to 6 feet wide, 4-foot rolls, \$350 oo.

Extra for each additional 6 inches above 4 feet, \$10 00

POWER

BOILER SHEET ROLLS. Same capacity as above, \$550 to to \$1200 ou.

Fig. 1085.

. PATENT "DUPLEX" LEVER PUNCHES:

POWERFUL, PORTABLE, SIMPLE, AND EASY TO WORK.

The open mouth Punches will be found invaluable. They possess great power, and will punch the heaviest Boiler and Ship Plates, Angle and other Iron, with ease and great rapidity.

These Punches require no skilled labor to use them, nor are they liable to break or get out of repair.

They are made of the very best materials, and exhibit the highest mechanical ingenuity in design and construction. They are so simple, and their application so apparent, that directions for use are quite unnecessary.

Centre of Punch to back.

No. 1. To Punch ½ inch through ¼ inch plate...1½ inch....Weight, 25 lbs.....\$62 50

" 2. " ¾ " " 1½ " " 42 " 80 00

" 3. " ¾ " " 2 " " 89 " 105 00

Including one tound Punch and Die of the largest Size.

Extra Punches and Dies. Pound, \$4 50 per pair.

LEACH'S PATENT HAND PRESSES AND SHEARS.

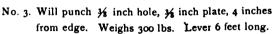


r. 1087.

DOUBLE LEVER HAND PRESS AND SAW GUMMER.

(Figs. 1087 and 1089.)

- No. 1. Will punch 3-16 inch hole, 1/8 inch plate,
 2 inches from edge. Weighs 35 lbs.
 Lever 18 inches long.
- No. 2. With Gauge and Die for Cutting and Gumming Saws. Will punch 1/4 inch hole, 1/4 inch plate, 3 inches from edge. Weighs 125 lbs. Lever 26 inches long.



Without Die......\$60 00

With Round Die and Punch...... 75 00

Dies of any shape to order.

DOUBLE LEVER HAND SHEARS.

(Figs. 1088 and 1090.)

This is the Best and Cheapest Hand Shears for HEAVY Work in use.

- No. 3. With Legs, will shear ¼ inch Iron; Lever 4 feet long; 14 inch blade...... 75 00

Will cut Plate of any width



Fig. 1088.-No. 2.



EACH'S PATENT

NO. 2

DEC: 16 1873

Fig. 1090.-No. 1.

SCREW PRESS.

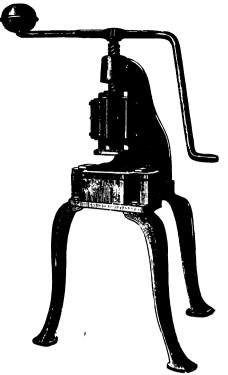


Fig. 1091.

Nos. 2 and 3 are of the same style, except that the levers have balls on each end.

No	1	2	3
Triple Thread, Pitch, in.	2	2	21/4
Each\$8	၀၀ ဝ၀	135 00	275 00

BENCH DROP PRESS.

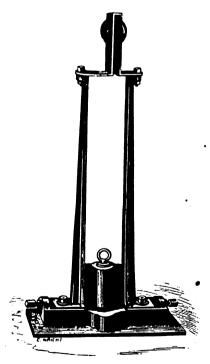


Fig. 1092.

Is very convenient for lettering and other	light
work.	
Length of Guides, feet	3
Width between Guides, inches	81/2

Each.....\$50 00

HERCULES IRON CUTTERS.

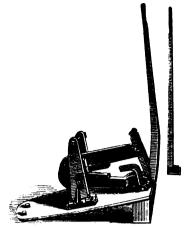


Fig. 1093.

No. 1-Weighs	62 lbs., cuts 3/8x2 inch, or 1/2		
inch	round or square	\$30	00
" 2-Weighs	165 lbs., cuts 3/8x2 inch, or 3/4		
inch	round or square	50	00
" 3-Weighs	357 lbs., cuts 3/x4 inch, or 1		
inch	round or square	75	00

CONCENTRATED POWER SHEARING AND PUNCHING MACHINES.



Fig. 1094.-SHEAR.

No.	1—Bar Shear, cuts 1/8x11/2 inch Iron Bar, and 1/4 inch Round Rod	\$ 10	00
**	2-Bar Shear, cuts 1/x2 inch Iron Bar, and	-	
	⅓ inch Round Rod	20	ο υ
**	3-Bar Shear, cuts 3/8 x 4 inch Iron Bar, and		
	1/2 inch and smaller Round Rod	60	00
••	4-Plate Shear, cuts 1/8 inch Sheet Metal		
	any width	30	00
••	5-Plate Shear, cuts 1/4 inch Sheet Metal		
	any width	55	00



Fig. 1095.-PUNCH.

No.	1-Punches 1/8 inch hole in 1/8 inch Iron,		
	2 inches from edge	\$15	00
"	2-Punches 3/8 inch hole in 1/8 inch Iron,		
	2½ inches from edge	25	00
**	3-Punches 1/2 inch hole in 5-16 inch Iron,		
	6 inches from edge	85	00

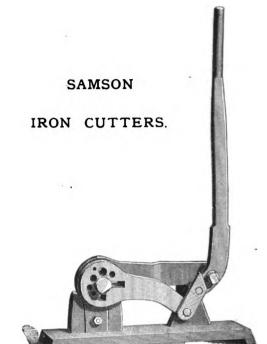


Fig. 1096.

No. I will cut 1/2 round, and fall sizes smaller; .will also cut 1/2 square and smaller, and 1/4 by 1 inch flat and smaller.

No. 2 will cut 3/4 round and smaller; will also cut % square and smaller, and 3/8 by 11/4 inches

No. 3 will cut I inch round and smaller; and also cut 1/8 square and smaller, and 1/2 by 1 1/4 that and smaller.

No.	I	Machine	B\$24	00
• •	2	• •		co
••	3	**	45	00

SCREW OR FLY PRESS.

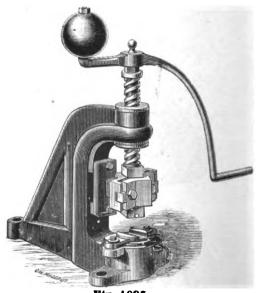


Fig. 1097.

No.	ı.	Screw	2	inch	diameter	\$45	ο υ
**	2.	**	2	**	**	60	Oσ
**	3.	44	2	½ ··	**	95	00
**	4.	••	2	18 ".	46	165	00

Lyon's Patent Hand and Power Shears and Punching Presses.



Fig. 1098.—CUTTING SHEARS.

ROUND RODS.

No.	\sim	Juts	1/4 and 3-10 inch		٠.			-		 	₹0	o
••	1-	**	5-16, 14, and 3-16 ir	ich				٠.	.	 .	12	0
••	2-	**	36, 5-16, and 1/4	••			٠.				15	o
••	3	**	1/8, 3/8, and 5-16	• •		٠, ,				 	18	o
••	4-	**	14, 14, and 36			<i>.</i>	٠.				24	o
••	5-	••	14, 5%, and 1/2	• •						 	40	0
• •	6—	**	3, 34, and 58	••							60	0
**	7	••	1, 34, 58, and 3/2	••						 	80	o
••	8	••	11/8, 1, 1/4, 1/4, 5/4 and	1/2	in	ch					100	o
			SQUARE	Ro	DS.							
No.	2—0	Cuts	5-16 and 1/4 inch					. . .		 	\$ 20	0
**	3		34, 5-16, and 1/4 incl	h		٠.					23	0
			1/ 3/ and6 11								-0	_



Fig. 1099.—CUTTING SHEARS.

FLAT BARS.

No.	0C	ut	· *	х	1-	10	٠.	٠.			٠		٠.								 ₹7	O	Ю
••	1	••	11/4	x	1/8					٠.											 10	0	0
••	2-	••	13/4	x	14		٠.								 					 	15	٥	О
••	3-	**	2	x	1/4		•								 					 	25	0	0
••	4	**	2	x	36				,											 	40	٥	О

Fig. 1100.

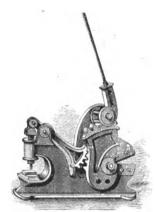


Fig. 1101.-COMBINED PUNCH AND SHEARS.

ROUND, FLAT BARS AND PLATES.	
No. o-Cuts to 3-16 inch wire, punches and cuts hoop iron	œ
" 2—Cuts to ¾ inch round, and to t¼x¼ inch bars, punches ¼ inch in ¼ inch iron, 3¼ inches from edge to centre of hole	oc
" 3—Cuts to ¼ inch round iron, and 3½x¾ inch bars, punches ¾ inch in ¾ inch iron, 4 inches from edge to centre of hole	or



WILL CUT ANY WIDTH THROUGH THE CENTRE OF SHERT,

Lever works from the front.

Lever works from the front.											
No. 1Cuts 3-16 inch											
iron \$40 on											
" 2-Cuts 1/4 inch											
iron 60 00											
" 3-Cuts 5-16 inch											
iron 90 00											
" 4-Cuts 3/8 inch											

Lever works from the back.

٧o.	5-Cuts 7-16 inch	
	iron	

Fig. 1102.-HAND SHEARS, FOR PLATES.

POWER SHEARS.

For Round Bar Iron. Is under instant control. This machine is a power attachment to our Hand Shear; for Round Bars.

No. 9—1				• • • •		•	 ٠.		,	 •		 		\$ 175	0	0
,, 10—1	Κ.	••	••		٠				٠.				٠.	275	0	0

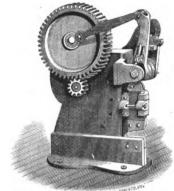


Fig. 1103.-POWER SHEARS, FOR PLATES.

Strong and thoroughly)built.

No.	3-Wil	l cut	5-16	inch	iron	in any	size sheet	 \$175	00
**	4-	••	38	••	• •		**	 225	00

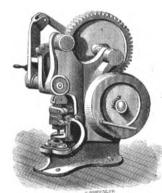


Fig. 1104.-POWER PUNCHING PRESS.

GEARED FOR CONTINUOUS WORK.

No. 4—Punches ½ inch in ¾ inch, 4 inches from edge. \$220 00
" 5— " ¾ " ½ " 7½ " " 300 co
Under instant control. For Tool, Boiler, Iron Railing, Carriage Shops.

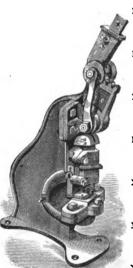


Fig. 1105.—PUNCHING PRESS, WITH LEVER.

No. o-Punches 1/8 in. hole in 1/8 inch iron, 21/2 ins. from edge to centre. \$25 00 No. 1-Punches 3-16 inch hole in 3-16 inch iron, 31/2 ins. from edge to centre, 30 00 No. 2-Punches 1/2 in. hole in 1/2 inch iron, 31/4 ins. from edge to centre..... No. 3-Punches 5-16 inch hole in 5-16 in. iron, 4 inches from edge to centre.... No. 31/2-Punches 3/8 inch hole in 5-16 in. iron, 4 inches from edge to centre.... 85 00 No. 4-Punches 3/8 in. hole in 3% inch iron, 4 inches from edge to centre 125 00 No. 5-Punches 1/2 in. hole in 1/2 inch iron, 71/2 inches from edge

to centre 160 ∞

GIANT IRON CUTTER.

(Fig. 1100.)

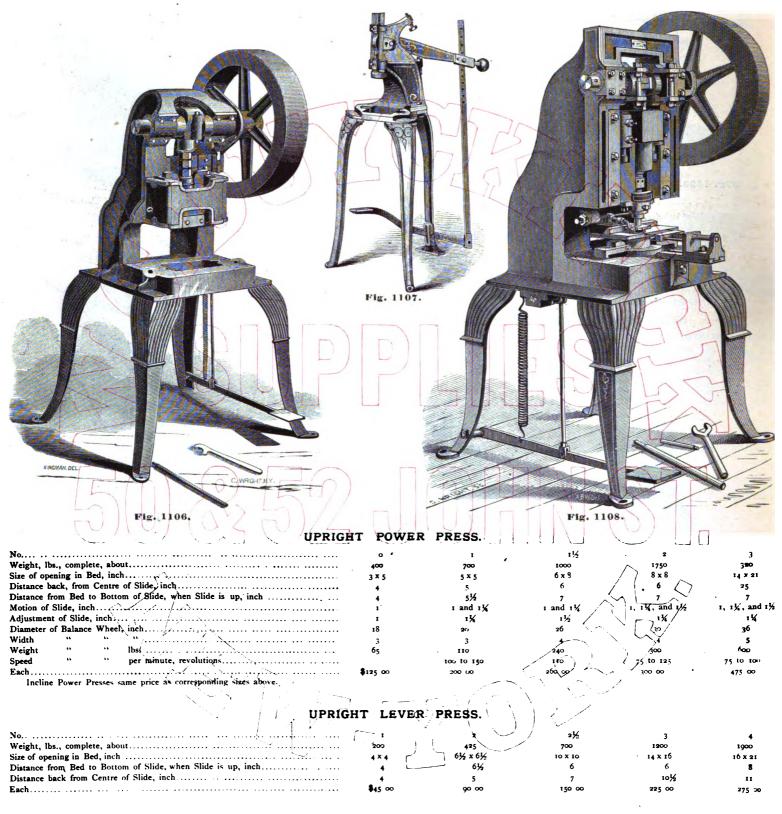
These Cutters will cut from 0 to 11/2 inch round or square iron; flat iron in proportion. Is 27 inches long by 20 inches high, and 9 inches wide; Iron Lever, 26 inches long; Hickory Lever, 5 feet long. Total weight, 300 pounds.

Single Cutters ...



DOUBLE ACTION CAM POWER PRESS.

UPRIGHT POWER PRESS. UPRIGHT LEVER PRESS.



DOUBLE ACTION CAM POWER PRESS.

Scale, about three quarters of an inch to the foot.

Weight, lbs., complete, about	2000	Diameter o	f Balance	Wheel,	, inch	20
Size of opening in Bed, round, inch		Width	**	••		31/4
Distance from Bed to Bottom of Slide, when Slide is up, inch	6	Weight	**	**	lbs	360
Distance back from Centre of Slide, inch	-	Speed	**	"	per minute, revolutions	100
Length of Stroke of Cutting Punch, "	*	With Attac	chment fo	or Feedin	ng, as illustrated	650 ∞
" Drawing " "	2 .	-				

HYDRAULIC PUMPS AND PRESSES

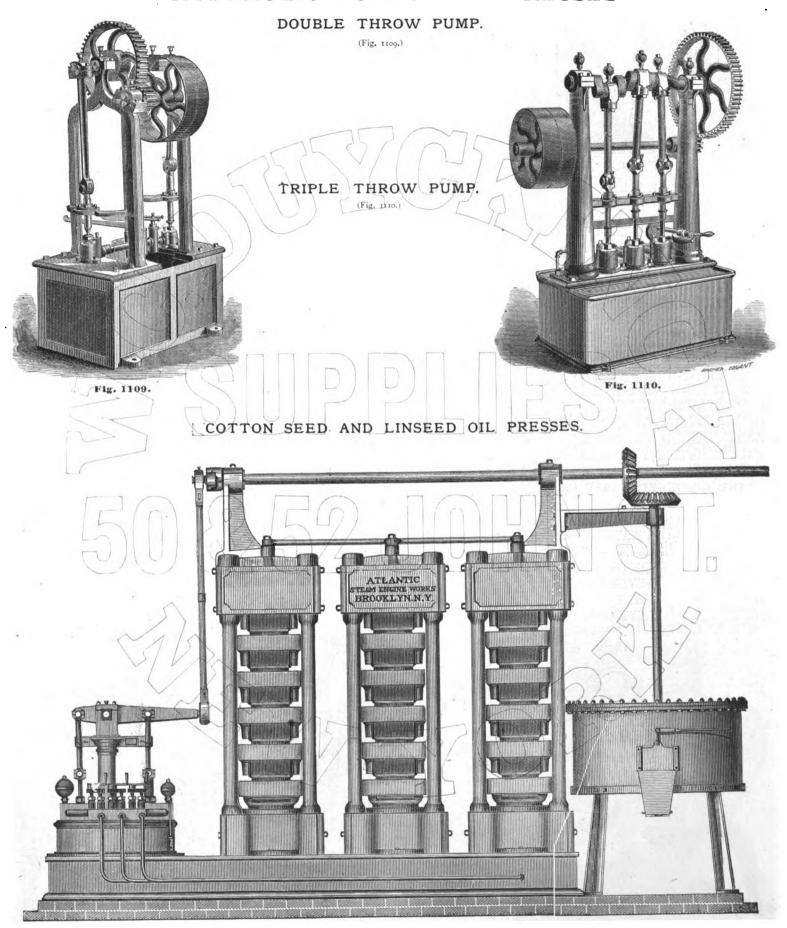


Fig. 1111.

Prices and Particulars on Application.

TAFT'S PUNCHING AND SHEARING MACHINES.

POWER SHEARS.

FOR POWER MACHINES.





Fig. 1112.

Fig. 1113.

PATENT HAND SHEAR.

(Fig. 1112.)

No.	ı cut	s 1/8 in	ch plate							
••	e "	3-16		٠.		. 	. 		. 45	00
••	3 "	72		٠.					. 75	00
••	4 wil	l cut 5	-16 inch	plate	iron.				. 105	00
**	5	" 3	' ''	٠,	٠	. 			145	
••	534	" i	• ••	round	or sq	uare b	ars, an	ıd ¼×≀	6	
	• , -	inch	flat bars,	with	one m	an			208	00
••	6 cu	Its 7-1	6 inch pl	ate iro	n	 .	 .	 .	208	00
••	634 '	٠ 12	••							
**	8 '		5 "	**		. 			345	00
٠.,	a will	cut i	1 round	. or \$4	x 6 in	ch flat	bars.		245	00

PATENT HAND PUNCH.

(Fig. 1113.)

No.	punches 1/2 inch hole in 1/4 inch plate iron, and 1/4 inches from centre of hole to edge of plate\$25 of
••	2 punches 3-16 inch hole in 3-16 inch plate iron, and
	21/2 inches from centre of hole to edge of plate 45 o
	3 punches 1/2 inch hole in 1/2 inch plate iron, and 31/2 inches from centre of hole to edge of plate 75 o
••	4 punches 5-16 inch hole in 5-16 inch plate iron, and
	4 inches from centre of hole to edge of plate 105 o
••	5 punches 36 inch hole in 36 inch plate iron, and 61/2 inches from centre of hole to edge of plate145 o
••	6 punches 7-r6 inch hole in 7-16 inch plate iron, and
	61/2 inches from edge of plate
••	7 punches 1/2 inch hole in 1/2 inch plate iron, and 61/2
"	8 punches 9-16 inch hole in 9-16 inch iron, and 61/2
	inches from edge345 o

PATENT COMBINED SHEAR AND PUNCH.

POWER PUNCH.

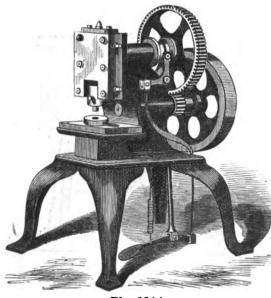


Fig. 1114.

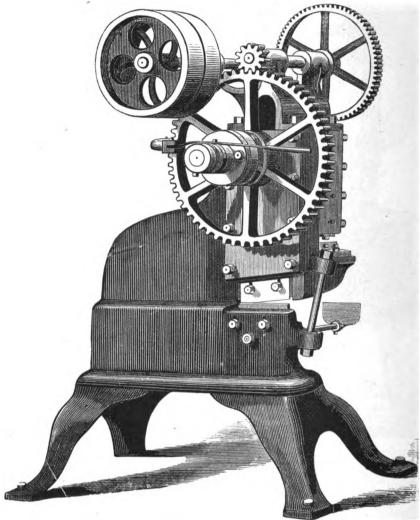


Fig. 1115.—No. 7.
Price on application, giving capacity desired.

BOILER PLATE SHEARS AND PUNCH.

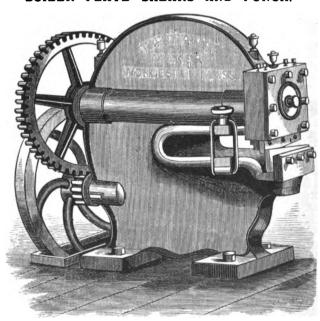


Fig. 1116.

No. 1. Works 14 inches from edge of plate... \$375 oo No. 2. Works 24 inches from edge of plate... \$800 00 No. 3. Works 26 inches from edge of plate \$1200 00

POWER NUT AND WASHER PRESS.

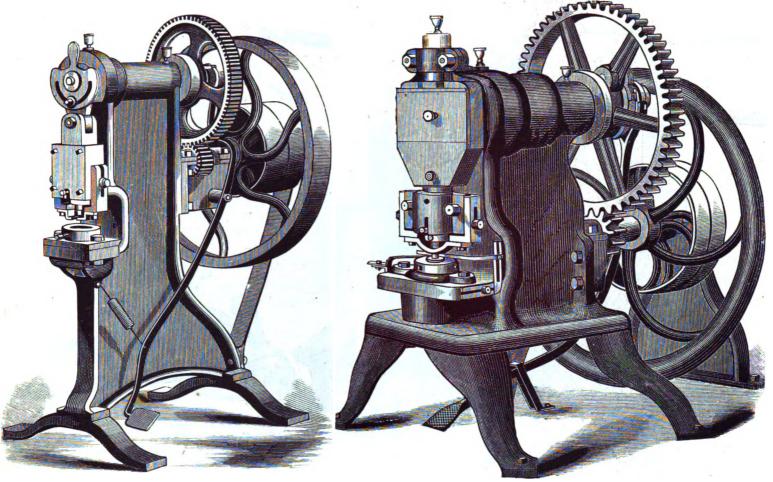


Fig. 1117.-No. 3.

No	1	2	3	4	5	6	7	8
Punches Iron, inch						7-16	3/2	3/4
Each\$7	75 00	110 00	160 0 0	240 00	350 00	475 00	575 00	800 00

Fig. 1118.-No. 8.

No 3	4	43/2	5	6	7	8	9	10	11
Punches Iron, inch. 3-16		5-16	3∕6	1∕2	.7%	_¾	1	11/4	11/2
Each\$225	250	300	400	550	675	800	950	1250	2030

TEAL'S IMPROVED POWER PUNCH.

IMPROVED COMBINED PUNCH AND SHEARS.

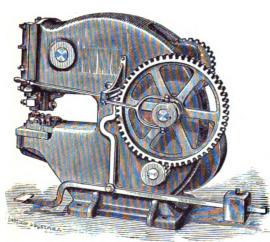


Fig. 1119.

(Fig. 1119.)

These machines are provided with a loose and a heavy fast pulley, and are made separately for punching, shearing plate and cutting off bar iron; and when desired, one machine can be furnished with attachments for all three purposes.

Our regular patterns for Boiler makers will punch 1 inch hole in 1/2-inch iron, shear 1/2-inch plate and cut off 1/2-inch bar iron, and will punch and shear in the centre of 42-inch and 60-inch plates.

Machines made to order for any kind of work, from the lightest to the heaviest.

The die-seat is capable of very accurate adjust-ment with the Punch; and for Boiler makers the machine is made small at the end on which the die-seat rests, for punching flanged heads, angle iron, etc. Punch Stripper is also adjustable to any thickness of iron.

(Fig. 1120.)

The Vibrators, which give motion to the Punching and Shearing Heads, and which, as in other machines, have three surfaces exposed to great friction, are provided with an arrangement for taking up the wear, or lost motion; this can be done by the operator in a simple and easy manner, and will avoid the necessity of repairing.

The Die-seat, which holds the Dies, is capable of very accurate adjustment with the Punch.

For Boiler Makers, this machine will punch as small as a 12 inch diameter flanged boiler-head, and measures but 1½ inches from centre of Punch to the end of machine.

The Punch "Stripper" can be adjusted to any thickness of iron.

The Shears run when belt is on the tight pulley, but the Punch can be worked at will by the clutch-lever. Our regular pattern for Boiler Makers will punch and shear ¾ inch iron 20 inches from the edge.

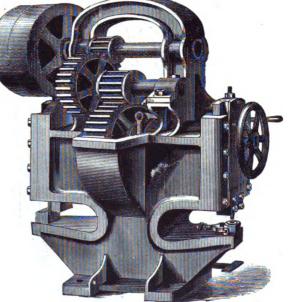
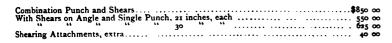


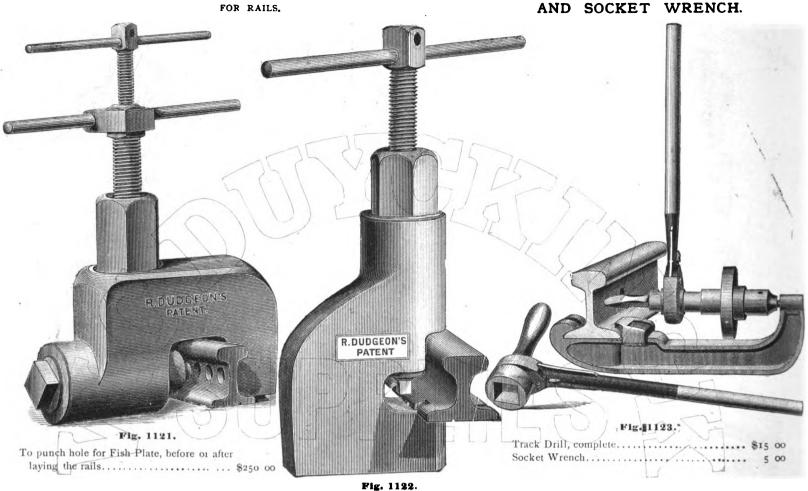
Fig. 1120.

Combination Shears and Punch for Hand or Power for 36 inch iron 15 inches from

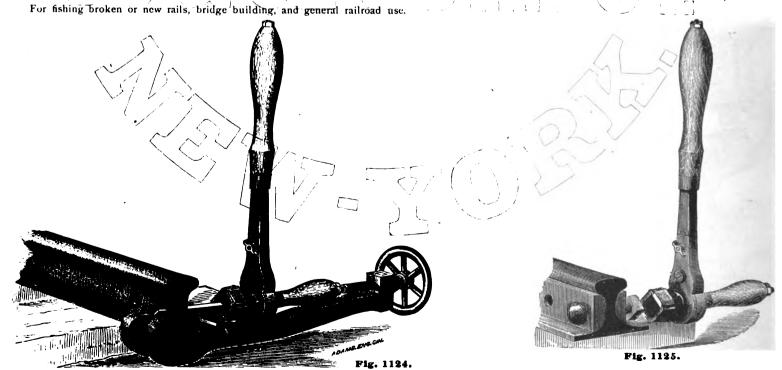


DUDGEON'S PATENT HYDRAULIC PUNCH.

PATENT TRACK RATCHET DRILL AND SOCKET WRENCH.



WILLIAMS' PATENT COMBINATION RATCHET WRENCH AND DRILL.



DUDGEON'S HYDRAULIC JACKS.

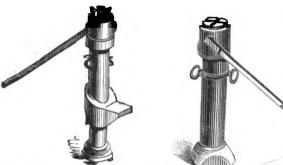


Fig. 1126.-Ground Lifting Jack



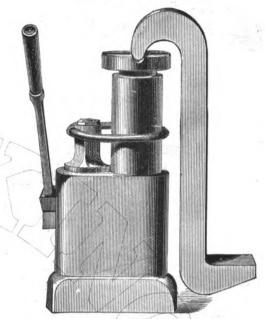


Fig. 1128.—BASE TACK. To lift or press 4 tons, and run out 12 inches and lift from the ground.

24
(Plain Jack)...

7
12
with wide base for locomotive shops

7
10
110
111
110
111
110
111
110
111
110
111
110
111
110
111
110
111
110
111
110
111
110
111
110
111
110
111
110
111
110
111
110
111
110
111
110
111
110
111
110
111
110
111
110
111
110
111
110
111
110
111
110
111
110
111
110
111
110
111
110
111
110
111
110
111
110
111
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
110
1



CLAW OR GROUND LIFTING HORIZONTAL JACK.

Fig. 1131.

BROAD BASE OR LOCOMOTIVE HORIZONTAL JACK.



Fig. 1132.

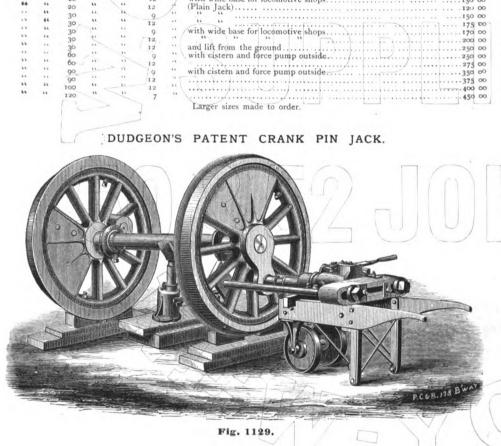
to, 15, or 20 tons of this style, to run out 2 feet, made to order. These Jacks run out their entire length horizontal or vertical, and will run out 6 inches further than the old kind while standing the same height; that is to say, a Jack to run out 18 inches will measure little if any more (when down) than one that runs out 12 inches; the Claw comes much nearer the ground, is made of wrought iron, and can be taken off when not needed; they are less liable to get out of order, are easily repaired, and are considered a far superior Jack by all who have used them. Prices and sizes same as the old kind.

(Fig. 1130.)

These Hydraulic Pulling Jacks are for stretching rigging, testing chains and ropes, pulling stumps, hoisting heavy weights, etc., in engine rooms or other places, especially where there is but little

These Jacks differ from the others by their being extended when commencing to work, and then being pumped together. The force pump is attached to the side, and is worked by a lever, the same as the Hydraulic Jack.

To stre	tch 2 f	eet an	dipull	8 1	8 tons									
**	` ,	**	-11	10										
**	2	**	**	15										
**	'2	44	**	20										
**	. 3	**	**	30	**	· · · · · · · · · · · · · · · · · · ·								



HYDRAULIC PULLING JACKS.



JACK SCREWS-BELL BOTTOM.



Length, in	nches				6		8	1	o	1	2	14	16	20	24
Diameter	Screw.	11/4	inches,	\$2	50	3	00								
4+	**	1 1/2	••	3	00	3	50	3	75	4	00				
••	••	134	**	3	25	3	75	4	00	4	50	4 75	5 90		
••	••	2	••	4	00	4	25	4	75	5	25	6 00	7 00	s oo	10 00
**	٠.	21/4	••			6	50	7	00	7	50	8 00	9 00	IO 00	12 00
**	• -	21/2	**			7	50	8	00	8	50	9 00	9 50	11 00	13 00

PATENT TRACK JACK.

To Lift 171/2 Inches.

(Fig. 1134.)

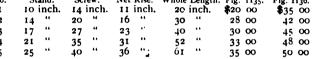
This cut represents a Track Jack that will lift the rail, with all the ties, and hold it while repairs are made—weight only 40 lbs. saves two men's work in every gang—never throws the track out of line. It can be used by any one.

The screw and foot forged in one piece of best wrought iron; the diameter of screw is 1½ inches. Handle, nut, and base plate

Per dozen.....\$96 oo



(Figs. 1135 and 1136.) Net Rise. Whole Length. Fig. 1135. Fig. 1136. 11 inch. 20 inch. \$20 00 \$35 00 20 inch. 28 00 30



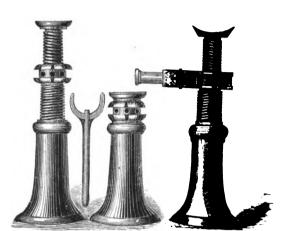


Fig. 1136. Fig. 1135.

Fig. 1134.

RATCHET LIFTING JACKS.

(Fig. 1137.)

18	inch,	per pair	r	\$75 0 0
24	1,5	**		00 001
7 36	"	**		125 00

LIFTING AND CARRYING JACKS.

(Fig. 1139.)

Per Pair...... \$175 00

CAST IRON JACK SCREWS.

With Nut to let into a wood block.

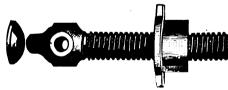


Fig. 1138.

3 × 22	inches	iong,	each.	 ٠.			 	 \$ 6	00
4 × 24	**	**	"	 • .	٠.	٠.	 	 8	00



Fig. 1139.



Flg. 1140.

Fig. 1137.

LEFFEL'S PATENT JACK.

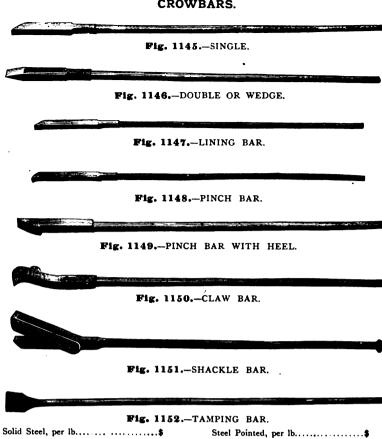
				Size of Wrought Bar with Hook.	Height when not in use.	Weight.	
No	. o.	Used fo	r very heavy lifting	3 × 2	30 inches.	180 lbs.	\$ 46 00
••	1.	**	raising Locomotives	2 × 2	29 "	123 "	25 00
	2.	**	" Cars	1¾×1¾	29 "	90 "	20 00
••	6.	••	" and ballasting Track	1¼×1¼	19 "	35 '	9 00
"	7.	**	Truck Box purposes	1½×1½	121/2 "	25 '	8 00

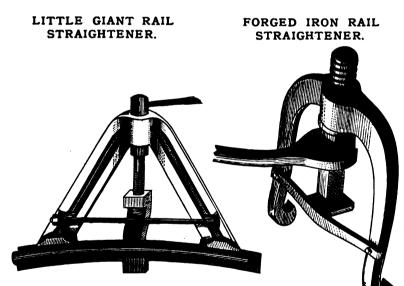
No. 4 for 4 inch round iron, weight about 130 lbs.... 75 00

The large machines will straighten iron down to the smallest size, but are not convenient for it on account of their length and weight.

Fig. 1144.

CROWBARS.





WILLISTON'S PATENT MACHINE.

Fig.,1153.

Each....\$28 00

TO CURVE AND STRAIGHTEN RAILS.

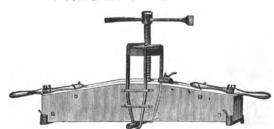
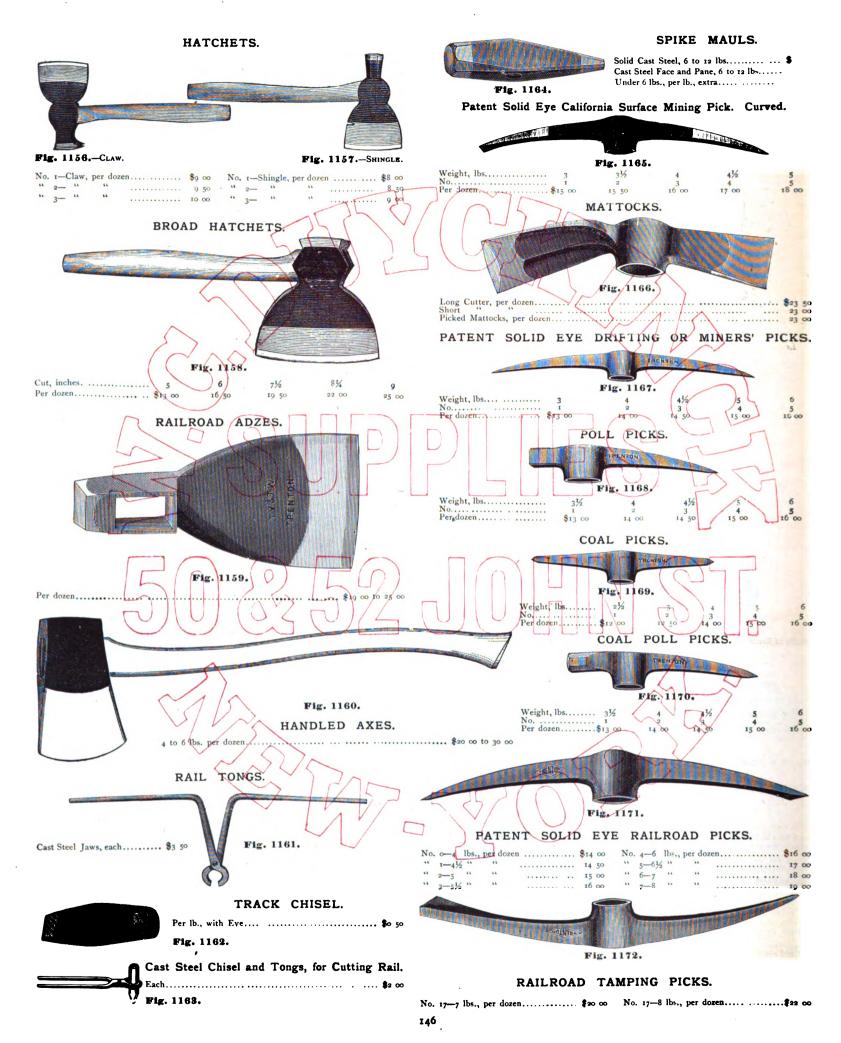


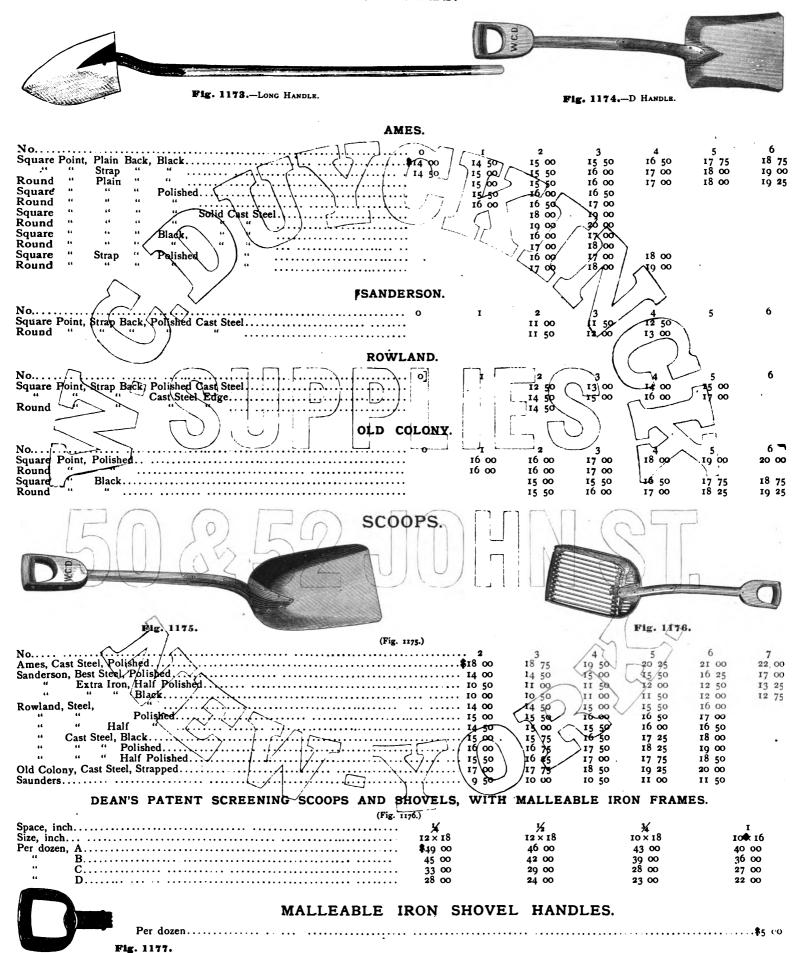
Fig. 1155. Each.....\$75 co

Fig. 1154.

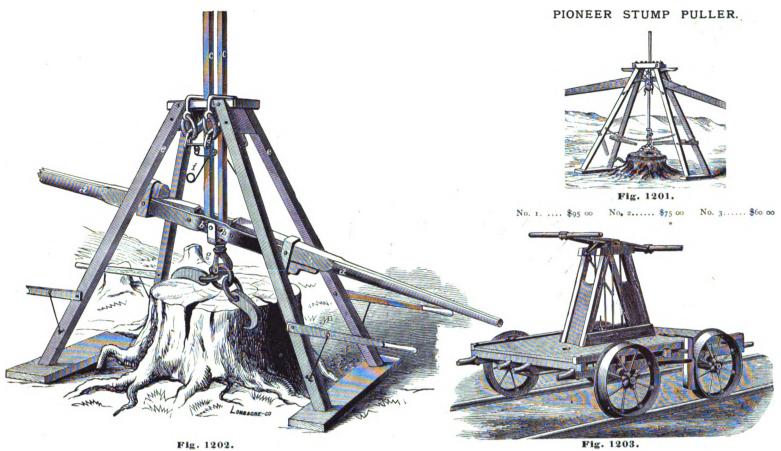
Each.....\$35 00



SHOVELS.



STONE HAMMER.	COBBLE STONE RAMMER.
Solid Cast Steel, 6 to 24 lbs., per lb	
Double Faced Stone Hammer. Solid Cast Steel, 6 to 24 lbs., per lb	Fig. 1190. Salisbury Iron Band, Wood of Locust, each
Fig. 1179.	
MASON'S HAMMER. Solid Cast Steel, 3 to 10 lbs., per lb	
Extra " Face and Pane, 3 to 10 lbs., per lb., " Fig. 1180.	Fig. 1191. Cast Steel Blade and Butt, per dozen
STONE SLEDGE.	
Solid Cast Steel, 6 to 24 lbs., per lb	Fig. 1192. Salisbury Iron, Cast Steel Faced and Pointed, per dozen
STRIKING HAMMER. Solid Cast Steel, 6 lbs. and upward, per lb cts. Extra " Face and Pane, 6 lbs. and upward, per lb "	Fig. 1193. Fig. 1194.
Under 6 lbs., extra per lb. 2 "Extra per lb. on all goods for full polish 2 "	SPOON OR SCRAPER.
HAND DRILLING HAMMER.	Fig. 1195.
Solid Cast Steel, per lb., 50 cts.	CHURN DRILLS.
Fig. 1183. Fig. 1184.	Fig. 1196. Cast Steel all sizes, per lb
Fig. 1183. Fig. 1184. COAL SLEDGE: MILL PICK.	Fig. 1196. Cast Steel all sizes, per lb
0041 01700	Cast Steel all sizes, per lb. SCRAPERS. Ordinary. Doty's Patent Revolving
COAL SLEDGE: MILL PICK. Fig. 1185. Fig. 1186.	Cast Steel all sizes, per lb. SCRAPERS. Ordinary. Doty's Patent Revolving Size Fig. 1196.
COAL SLEDGE: MILL PICK.	Cast Steel all sizes, per lb. SCRAPERS. Ordinary. Doty's Patent Revolving Note: Bottom Ordinary. Size of Scraper, inch. Size of Scraper, inch.
Fig. 1185. Fig. 1186. Coal Sledges, Solid, 5 to 9 lbs., per lb. Extra Steel Face, 5 to 9 lbs., per lb.	SCRAPERS. Ordinary. Doty's Patent Revolving
COAL SLEDGE: MILL PICK. Fig. 1186. Coal Sledges, Solid, 5 to 9 lbs., per lb. "Extra Steel Face, 5 to 9 lbs., per lb. "Steel Face, 5 to 9 lbs., per lb. "Mill Picks, superior quality, 2 to 4" doz. "	SCRAPERS. Ordinary. Doty's Patent Revolving
COAL SLEDGE: MILL PICK. Fig. 1186. Coal Sledges, Solid, 5 to 9 lbs., per lb. "Extra Steel Face, 5 to 9 lbs., per lb. "Steel Face, 5 to 9 lbs., per lb. "Mill Picks, superior quality, 2 to 4" doz. "	SCRAPERS. Ordinary. Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revo
COAL SLEDGE: MILL PICK. Fig. 1186. Coal Sledges, Solid, 5 to 9 lbs., per lb. "Extra Steel Face, 5 to 9 lbs., per lb. "Steel Face, 5 to 9 lbs., per lb. "Mill Picks, superior quality, 2 to 4" doz. "	SCRAPERS. Ordinary. Doty's Patent Revolving Doty's Patent Revolving Ordinary. Doty's Patent Revolving Ordinary. Doty's Patent Revolving Ordinary. Doty's Patent Revolving Ordinary. Doty's Patent Revolving Ordinary. Doty's Patent Revolving Ordinary. Doty's Patent Revolving Ordinary. Doty's Patent Revolving Ordinary. Doty's Patent Revolving Ordinary. Doty's Patent Revolving Ordinary. Doty's Patent Revolving Ordinary. Ordinary. Doty's Patent Revolving Ordinary. Ordinary. Doty's Patent Revolving Ordinary. Ordinary. Doty's Patent Revolving Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary.
Fig. 1185. Fig. 1186. Coal Sledges, Solid, 5 to 9 lbs., per lb. Extra Steel Face, 5 to 9 lbs., per lb. Mill Picks, superior quality, 2 to 4 " " doz. " BELGIAN STONE RAMMER. Fig. 1187.	SCRAPERS. Ordinary. Doty's Patent Revolving Wo IT Street Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving Doty's Patent Revolving
COAL SLEDGE: MILL PICK. Fig. 1186. Coal Sledges, Solid, 5 to 9 lbs., per lb. Extra Steel Face, 5 to 9 lbs., per lb. Mill Picks, superior quality, 2 to 4 " " doz. " BELGIAN STONE RAMMER.	SCRAPERS. Ordinary. Doty's Patent Revolving Size Fig. 1196.
COAL SLEDGE: Pig. 1185. Fig. 1186. Coal Sledges, Solid, 5 to 9 lbs., per lb	SCRAPERS. Ordinary. Doty's Patent Revolving W Ordinary. Doty's Patent Revolving Ordinary. Doty's Patent Revolving Ordinary. Ordinary. Doty's Patent Revolving Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordi
COAL SLEDGE: Pig. 1185. Fig. 1186. Coal Sledges, Solid, 5 to 9 lbs., per lb. "Extra Steel Face, 5 to 9 lbs., per lb. "doz. BELGIAN STONE RAMMER. Fig. 1187. Salisbury Iron, Cast Steel Faced Locust Plug, Hickory Handle, each. \$15 00 SAND RAMMER.	SCRAPERS. Ordinary. Doty's Patent Revolving W Ordinary. Doty's Patent Revolving Ordinary. Doty's Patent Revolving Ordinary. Ordinary. Doty's Patent Revolving Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordinary. Ordi



THE LITTLE GIANT IMPROVED STUMP PULLER AND ROCK EXTRACTOR.

Extra Cable, Hooks, or Rings, for No. 1 Machine. \$4 00 6 00

Track Gauge, Heavy......\$3 00

T—Ruble Car, 10 inch Plate Wheel. 55 00 t—Iron Lorey Car. 105 00 Track Gauge, Light..... \$1 50

Sharts' Portable Railway Switch, or Car Replacer, per pair...... \$50 00

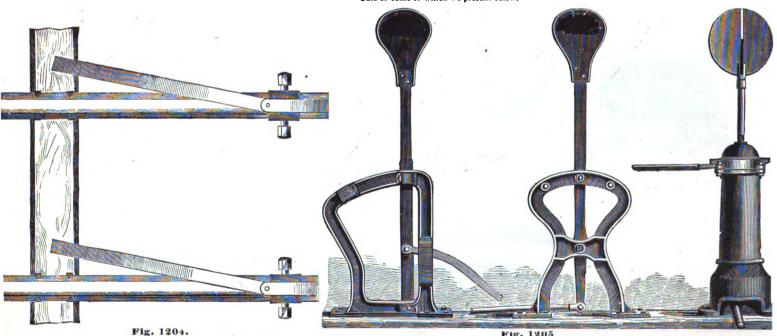
HAND CARS.

Fog Signals, per gross..... \$10 00

PURVES' PATENT PORTABLE RAILROAD SWITCH.

We are prepared to furnish, at short notice, various styles of RAILWAY SWITCH STANDS,

Cuts of some of which we present below.

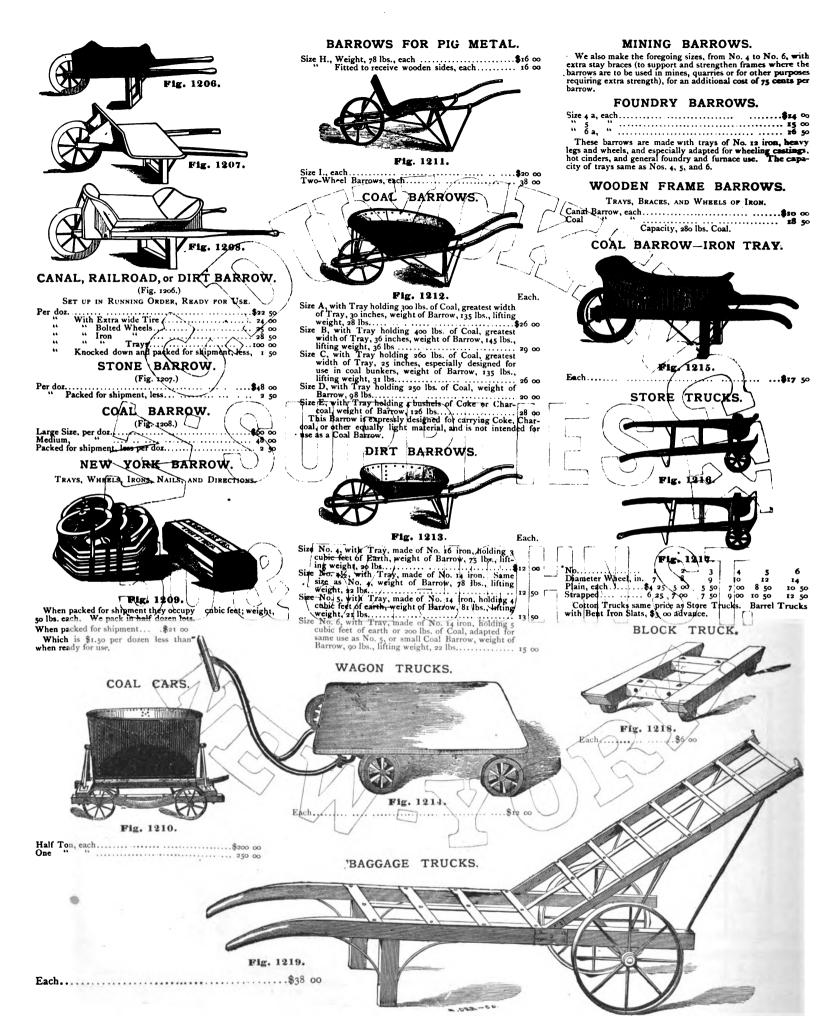


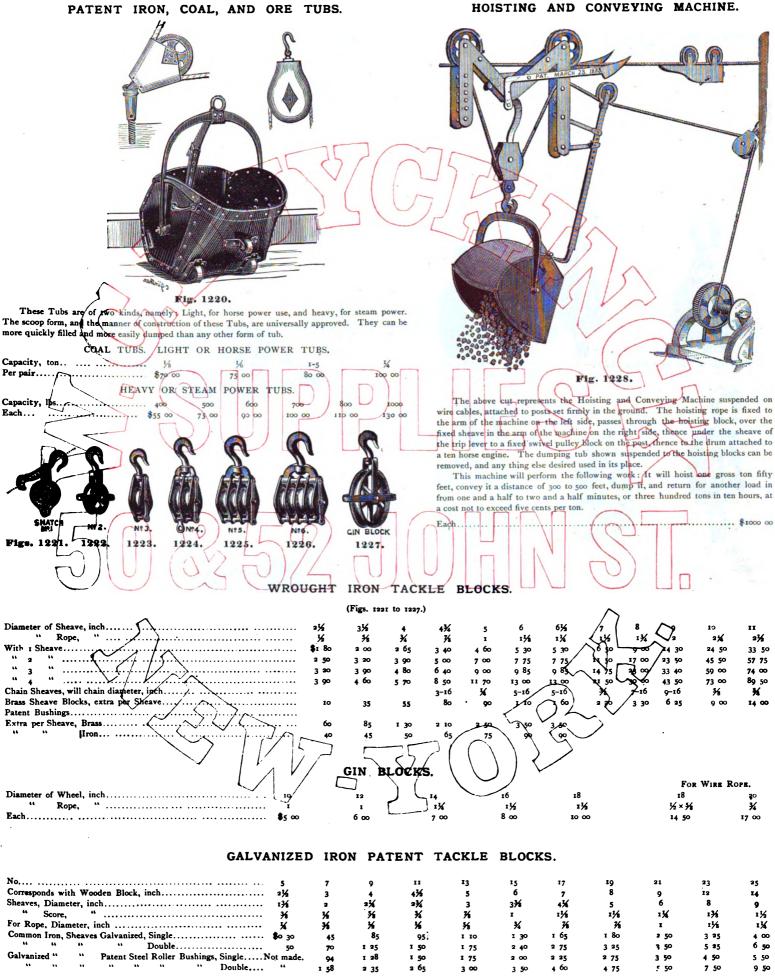
Per Pair.....\$50 ∞

Rails, Frogs, Spikes, etc., furnished.

Fig. 1205 Lever Switch Stand, Single Throw, \$18 00-Lever Switch Stand, Double Throw, \$16 00-Crank Switch Stand \$25 00

Digitized by Google







BLOCKS ROPE STRAPPED.

WITH LOOSE HOOKS. LIGNUM-VITÆ SHEAVES.

D ----- D.....

Fig. 1229.

DIMENSIONS.			. 1	RON BUSHEL).	KOLLER BUSHED.				
Sheave. Inch. 1 Inch.	For Rope.	Shell. Inch.	Single. Each.	Double. Each. \$1 50	Triple. Each.	Single. Each. \$1 30	Double. Each. \$2 50	Triple. Each.		
3, ×	**	5	1 00 1 21	1 70 2 10	2 30	1 to	2 75	4 25 5 00		
4%×1%	3%	7	1 42	2 45	2 70 3 10	2 35	3 70 4 35	5 85		
5 × 1/1	ī	8	1 95 2 20	3 25 3 90	4 15 5 10	3 00 3 40	5 60 6 40	7 75 8 70		
61/4 × 11/8	11/8	10	2 40	4 65	6 o o	3 90	7 30	9 80		
734 × 114 8 × 134	1 1/2	11	2 80 3 25	5 45 6 15	7 00 8 00	4 50 4 00	8 30 9 25	11 50		

INSIDE IRON STRAPPED BLOCKS.







Fig. 1230 .- Double. Fig. 1231 .- Single, with Becket. Fig. 1232. COMMON LOOSE HOOKS.

WITH STIFF HOOKS WITH MORTISE.







Fig. 1233.

Fig. 1234.

WITH STIFF SWIVEL HOOKS WITH EYES FOR SHACKLES WITH STIFF SWIVEL HOOKS. AND BECKETS. OR LASHING.

D	DIMENSIONS.		Соммо	n Iron Bus	HED.	PATENT ROLLER BUSHED.			
Sheave. Inch.	For Rope. Inch.	Shell. Inch.	Single. Each.	Double. Each.	Triple. Each.	Single, Each.	Double. Each.	Triple. Each.	
3 × 1	1 %	5	. 1 35	2 50	3 50	2 00	3 8o	5 50	
31∕4 × 1	3 4	6	1 70	3 00	4 15	2 50	4 55	6 55	
438 × 17	3/8	7	2 00	3 6o	4 80	2 95	5 45	7 65	
5 × 17	z . z	8	2 30	4 15	5 50	3 35	6 25	8 55	
5 3/4 × 1 1	I I	9	2 55	4 65	6 20	3 80	7 00	9 85	
61/4 × 1-7	11/8	10	2 85	5 15	6 90	4 20	7 8o	10 95	
738×13	11/8	11	3 40	6 25	8 45	4 90	8 6o	12 50	
8 × 134	6 1 ¼	12	3 75	6 8o	9 25	5 35	10 00	13 75	
85/8×13/	6 1⅓,	13	4 35	7 30	10 75	6 15	11 50	16 00	
9 × 14	138	14	5 00	9 00	12 50	6 75	12 50	17 50	
10 X 15	4 114	15		to to	15.00	7 25	12 50	70 50	

Blocks with Match Hooks 2½ cents net per inch each Mortise more than same size with Common Hook as above.

Fig. 1236.







Fig. 1237.-WITH LOOSE SWIVEL HOOKS. Blocks with Loose Swivel Hooks cost 3½ cents net per inch each Mortise more than same size with Common Hooks.

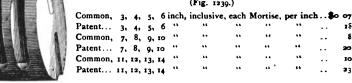
DOCK BLOCKS.

PATENT BUSHED. (Fig. 1234.)

BLOCKS FOR ROPE STRAPS.

LIGNUM-VITÆ SHEAVES.

(Fig. 1239.)



LIGNUM-VITÆ SHEAVES FOR BLOCKS.

Length of Block, inch	3 × 11 3/8 25 65	6 3½×11 36 30 80	7 436 × 118 1/2 35 95	8 5×1 m 1/2 45 1 10	5¾×1¾ 5½ 55 1 25
Length of Block, inch 10 Size of Sheave, 6½ × 1 1 Size of Pin Hole 5% Common Iron Bushed \$0 65 Patent Roller Bushed 1 50		ю	95	1 15	1 30

THICK MORTISE BLOCKS.

EXTRA HEAVY INSIDE IRON STRAPS. EXTRA THICK MIDDLES, AND CHREK EDGE BOLTED.



Fig. 1240.

Diamete	er, for		ich	11/8	11/4	13%	13/8	11/2	11/2	1 3/8	13/4
••	She	C11		8	9	10	11	12	13	14	15
Commo	n Iron		, Single, ead	ch\$3 25			4 70	5 30	6 00	6 70	7 70
**		**	Double, '		6 75	7 50	8 8o	9 90	11 00	12 25	14 00
	**	**	Triple, "	8 40	9 35					17 50	
Patent l				4 25		5 50	6 35	7 00	7 85	8 60	9 50
••	•••	**	Double, '		9 10	10 40	11 50	13 00	15 00	16 50	18 oo
**	**	**	Triple, "	11 35	13 00	15 00	17 00	19 00	21 00	23 25	26 50

HEAVY PURCHASE BLOCKS WITH RINGS.

IRON BUSHED SHEAVES.



Fig. 1241.

Diameter of Rope, inch	16	2 18	2 1/4 20	2 ½ 22
Single, each	\$11 00	18 00	23 00	30 ∞
Double, "		32 00	40 00	50 00
Triple. "	28 50	42 00	53.00	65 00

Heavy Purchase Blocks with solid or open Iron Sheaves, Patent Steel Roller Bushed, furnished to order.

SNATCH BLOCKS.

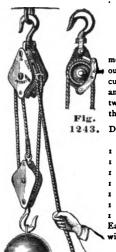
WITH SWIVEL HOOK.



Fig. 1242.

WOOD SIDES. EDGE BOLTED.

Size, inch	7	8	.14	10	12	14	16 2	18 214	90 21/4
Kope, 78 Each	5 65	6 45	7 90	8 80	10 50	13 20	15,10	20 75	24 50



SELF-SUSTAINING ROPE PULLEY BI OCKS

It is self-sustaining, the eccentric brake being put in action by moving the hand rope to the right or left, or by pulling the rope outward, causing it to touch the guide A (shown in the smallest cut), which acts as a friction clutch, holding the weight firmly at any desired point. To lower, pull down the hand rope an inch or two; this will release the brake; then allow the rope to run freely through the hand.

Diam	. of Shea	ve, inch,	21/2	31/2	4	4¾	5	6
**	Rop	e, "	₹8	1/2	₹6	¾	2/8	I
pair	1 4 1 Sh	eave	\$ 6 ∞	6 40	7 35	9 00	11 40	12 90
••	1 & 2	"	6 55	7 35	8 40	10 45	13 50	15 10
**	2 & 2	**	7 15	8 30	9 45	11 90	15 70	17 20
**	2 & 3	"	7 75	8 90	10 25	12 90	17 20	18 90
**	3 ♣ 3		8 30	9 45	11 00	14 10	18 75	20 70
٠	3 4 4	**	8 90	10 00	11 8o	15 85	21 00	23 40
**	4 4 4		9 45	10 60	12 55	17 60	23 35	26 00
ach	Sheave	will lift						
ith s	afety, al	out.cwt.	1	3	<	7	10	1.7

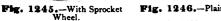














				PL	AIN.	Yo	KES		
STYLE.	C		CHAIN.	SHE	AVES.	AND F	looks.	Pı	NS.
$\overline{}$	_			·-					
Y. Ton.	Complete.	Regular O.L.gth, ft.	♦ Extra per ਨ foot.	Top.	Bottom.	Top	Bottom.	Top.	Bottom.
1/2	25 00	26	40	\$2 50	\$1 50	\$4 00	\$3 25	\$o 8o	\$ o 65
I	30 00	30	44	3 00	1 25	4 75	3 75	1 00	o 8o
11/2	40 00	34	48	4 50	1 75	6 00	4 75	1 20	1 00
2	50 00	38	52	6 50	2 50	8 00	6 00	1 50	1 25
3	70 0 0	38	60						
WITH	SPROC	KET	WHEEL.	ļ.,		G	EARED.		

WIT	TH SPRO	CKET 1	WHEEL.	i.		GEAREI).	
		Сн	IAIN.	1	MAIN	CHAIN.	HAND	CHAIN.
Ton.	Each.	Regular E'gth, ft.	Extra, per foot.	© cch.	Regular o L'gth, ft.	©Extra per	8 L'gth, ft.	Extra per
2	\$75 ∞	30	\$ 0 50	8o oo	30	55	20	40
3	100 00	30	50	120 00	30	60	20	40
4	140 00	30	50	170 00	30	70	20	40
5	200 00	50	60	225 00	30	90	20	40
6	300 00	50	70	300 00	35	1 00	25	40
8	400 00	50	75	11 .				
10	500 00	50	8o	11 .				

In ordering Chains, allow four feet of chain for each foot of hoist, except for Sprocket Pulleys, which require only three feet.



PICKERING'S PATENT PULLEY BLOCKS.

. They sustain the load, and can not slip. The lifting chain is supplied with a hook at each end, no lowering being required for a fresh load. The working parts run on steel, and, being internal, are not liable to accident.

Having two chains, they work with less friction and with more speed than has been obtained with any other pulley block, enabling one man to lift from 15 to 20 cwt.

Can be worked at an angle, thereby enabling the workman to stand from under the load.

Lifting Power, ton.	Height of Lift, feet.	Complete.	Extra Chain, per foot lift.
1/2	8	\$25 00	\$1 0 0
1	8	30 ∞	1 50
11/2	8	40 ∞	r 65
2	9	50 0 0	1 8o
3	10	75 ∞	2 20
4	. 10	95 00	2 30

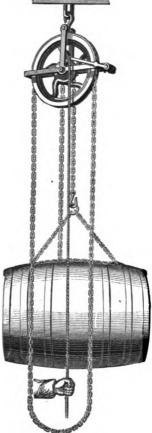


Fig. 1249.-Hoist, with Brake.

PICKERING'S PATENT SACK HOIST.

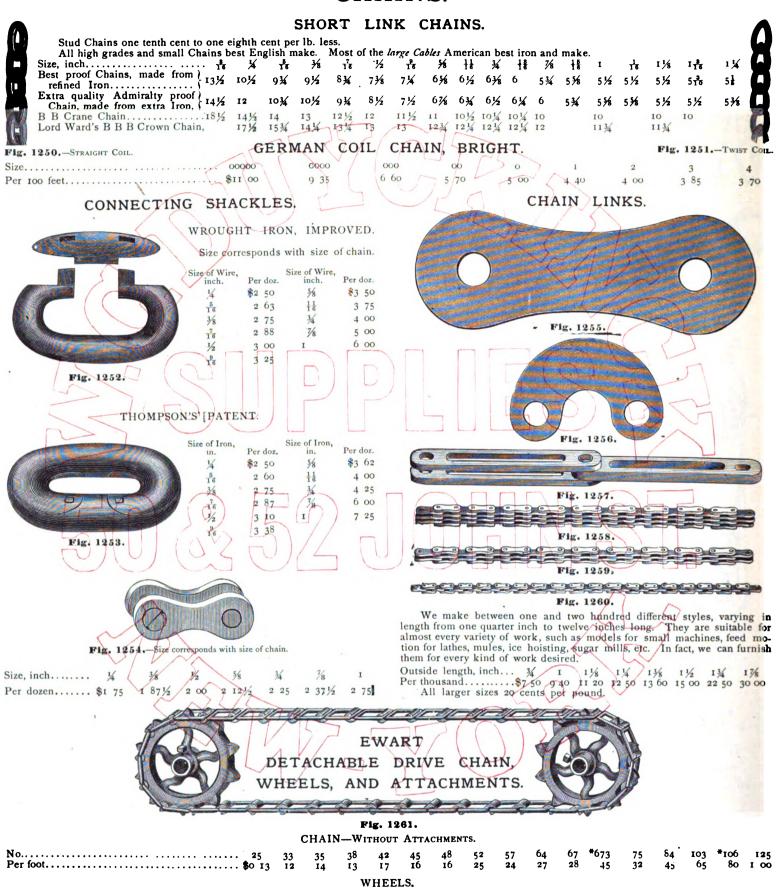
These Hoists are made so that a man may lift or lower any load, at a quick speed, any height of lift, according to length of chains. With a pull equal to 1 cwt. upon the endless chain, 5 cwt. can be raised on the smallest size Hoist.

t While the load is being raised by one end of the lift chain, the other end is descending for a fresh load. They are made in three forms, with and without ratchet for sustaining the load, and with brake for quick and easy lowering. They are useful for builders, warehouses, mills, farmers, etc.

Hoist to lift 500 lbs., without Brake or Ratchet .. \$16 00 Chain, including Hooks or Rings, per running foot, 23 Hoist to lift 1000 lbs., without Brake or Ratchet, 23 00 Chain, including Hooks or Rings, per running foot, 27 With Ratchet, extra, to each 5 00 " Brake, 10 **c**o

In ordering Chains, the height of lift must be given. In many cases it will not be necessary to order the endless hand chain the same length as the lifting chain, as the hoist can be worked on the top floor when the lift chain can be loaded at the bottom; but if not specified otherwise, the full length will be sent.

CHAINS.



Digitized by Google

21 00 33 00

11 50 13 75 17 00

Wheels bored and key seated or set screw, at above price.

If ordered in the rough, mention size of bore intended.

72

48 00

5 25

6 50

6 00

7 50

8 50

9 50

18

4 45

5 50

16

4 85

10

First figure of number indicates the gauge iron in sixteenths inch.

12

3 00 3 25 3 75 3 75 4 00 4 50

Diameter, inch..

* 3-Bar Links.

For No. 45 Chain, \$2 00 2 35 2 75 67 " 2 80 3 50

WIRE ROPE.

HOISTING ROPE, 19 WIRES TO THE STRAND.

E STEEL, IRON.	Cim Dia Bre Pro Cim Mir Per Bre Cim Pro Mir Per	meter akin per sumfrimu foot akin cumfrimu foot foot akin cumfrimu foot	erencer, inc g Stra Worki erence m Siz g Stra erence Worki m Size	e in ir hes in in ng Lo e of I e of I ng Lo in in e of I ng Lo	Tons oad in Hemp Drum Tons Hemp oad in	of 20 Tons Rope or Sh of 20 Rope Tons or Sh	oo lbs. s of 20 e of E eave i coo lbs. of E s of 20 eave i	oo lbs. qual St n Feet qual St oo lbs. n Feet	rength		• • • • • • •	63 	65 13 2 14 7	16	3 5½ 5½ 54 11 13 6½ 95 78 153 7½ 123 28	5 158 44 9 12 5 76 64 14½ 13 6	3	5 4% 11% 15 7 10% 4% 61 52 13 11 5% 5% 5%	6 4 11/4 27 51/2 9 /2 4 48 39 121/2 9 62 incl. d	7 3½ 1½ 20 4 8 3½ 40 30 10 6 4½ 53		:	9 23/4 11/2 21/4 6 21/4 6 27 20 8 8/4 4 3 3/4 3 3/4	10 21/4 3/4 8.64 2 5 2/2 20 13 61/2 3 3/4 27	1014 2 34 5.13 114 432 2 19 7 5 2 3	10½ 1½ 9-16 4.27 4 1¼ 17 5 4¼ 1½ 2¾	10¾ 1½ ½ 3.48 ½ 3½ 1½ 15
IRON.	Tra Circ Dia Cin Ult Pro Per Cin Ult Pro Per	de Noumi mete cumi imat per l foot cumi imat per l	erence e Stre Load e Stre Load erence e Stre	e in in the of I ngth in To	Hemp in To ons of Hemp in To	Rope 2000 Rope ns of 2000 l	of Ecool lbs	ual Stros.	rength ength		36 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30	752 48 43 10 63	36 36 9 52	4 [14/ 33/8 11/8 88/4 20 5 32 29 7 42	15 3 177 16 4 27 8 23 6 34	6 12 3 20 7 18 5 27	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	17 14 13.8 18 18 18 18	18 21/8 11-16 7.6 2 15 534	178 434 5.8 114 12 5.8 214 15	20 15 24 4.1 1 9 434 6 114 12	7 3 2. 8	21 2 34 1 -16 3 14 23 83 2.1 34 7	61/4	24 1 9-32 21/4 1.38	25 % % 2 1.03
be :	made	OTE wit	Wi haH	ere la emp	arge V centre	Vindi: e.	ng Dr	ums an	d'Shea	vòs are	/	he Ropes				tables an FA						n N6. 1	6 down	. Where	thus used, t	hey should	always
					6	Ç	⊧o s	ED	30 C	KET										UND		ІМВІ	LES	SPLIC	ED IN	i	
										e e e	444											12111411					
For	2	inch	. dian		Rope.	each	Lat. 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Fig.	1262	_		11 00 10 00 8 50 6 50 4 50 3 75 3 25 2 75 2 25 1 75 1 75	Fasten		7 50 10 00 1 7 75 2 50 4 75 4 00 3 25 3 00 2 75 2 25 2 25	Fo	17 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	inch. di	ameter		Oval	same 1	price as	Round.			\$2 75 2 50 2 25 2 00 1 75 1 50 1 00
	78		Ĺ			•	PE	 N S	оск	ETS	······	1 50			2 00					H	IOOK	AN	D S	OCKE.	كسلا		,
					non-								76	0)	į		2			10 100 10 10 10 10 10 10 10 10 10 10 10			0	5	7	
For	2	66 66 66 66 66 66 66 66 66 66 66 66 66	diam			CHAN	Loos	e adon	/	șize an	ad quai	\$\\\ 13 \text{ RD} \\\ 9 \text{ RD} \\\ 7 \text{ PS} \\\ 4 \text{ RD} \\\ 3 \text{ PS} \\\ 4 \text{ RD} \\\ 3 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2 \text{ PS} \\\ 2	Faston		74 50 10 50 10 50 6 50 5 50 6 50 5 50 4 75 3 3 50 3 25 2 75 2 75 2 75	F	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	pch. di	ameter		ook	1	1266	нимв	\$14 00 12 00 10 00 8 00 6 00 4 50 3 75 3 3 50 2 50 2 50 2 2 50 2 2 50	Fastenee	d, \$15 50 13 50 11 50 9 25 7 00 6 00 5 25 4 25 4 00 3 75 3 00 2 75
For	· 2¥	inch	diam	Solonia de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición de la composición della composición della composición della composición della composición della composición della composición della composición della composición della composición della composición della composición della composición della composición della composición della composición della composición della composición della composición della composición della composición dell	Rone				1264				Fasteng									Fig.	1267				
66 66 66 66 66 66 66	X XXXXX XXXXX		 			11 11 11 11 11	11 11 11 11 11 11 11 11 11 11 11 11 11					11 50 10 00 8 50 7 50 6 50 5 50 4 50 4 00		1 1 1	5 \$0 3 00 1 25 9 50 8 25 7 25 6 25 5 00 4 50 4 00	Fo	N.XXXX	ngh. dia	ameter :	Rope, e.					\$2 00 1 75 1 50 1 25 1 00 1 00	Fastene	ed, \$4 25 3 50 3 25 3 00 3 00 2 50 2 25 2 25
**	,-	;; VH	:: EEI		." FO	:: R 1		 NSM	ISSI	ON		3 25	" Er b		3 75 3 75	For	11/6	nch. dia	ameter 	Rope, e		ose		• • • • • • • • • • • • • • • • • • • •	\$3 00 2 50 2 25 2 00	Fastene	5 00 4 00 3 50
. . .	fact :							IAFT A		ED WIT		rent Ru		£ ^			2	 	66 66	 					1 80 1 50 1 50	"	3 25 2 50 2 50 2 50
2 72 1 2 3 4 5			eter, e		• • • • • • • • • • • • • • • • • • • •			8 00 15 00 13 00 13 00	8 9 10 11	Wheel			lves	12	5 00 5 00 0 00 0 00	•	THI	CLAB	EA MPS.					Fig.			<u> </u>

WIRE.

STUB'S BRIGHT STEEL WIRE.

No. 1/2	to 15,	per lb.		· • •		• • • • •	• • • • • •	· · · · · · · · · ·	\$1 25
" 16	to 30,	**	• • •						1 35
·· 31	to 38,	**					. 		1 50
" 39	to 46,	**					· · · · · · ·		1 65
" 47	to 50,	••							1 85
" 51	to 54,	**							2 38
" 55	to 57,	**							2 85
" 58	to 60,	**					<i></i> .		3 35
" 61	to 62,	**							3 85
" 63	to 65,	**			· • • • •		. . .		4 35
" 66	to 68,	**					,		4 80
·* 69	to 70,								5 40

IRON WIRE.

Nos	. o to	6,	për It) , 0	09
**	7 t o	9,	••		10
**	10 to	11,	**		11
**		12,	**		111/2
**	13 to	14,	•• .	· · · · · · · · · · · · · · · · · · ·	121/2
••	15 to	16,	••		14
٠٠,		17,	••		15
**		18,	••		16
**		19,	••	• • • • • • • • • • • • • • • • • • • •	19
••		20,	**		3 0
**		21,	**		21
		22,	**		22
		23,		•••••	23
**		24,		•••••	24
**		25,	**		25
**		26,		•••••••••••••••••••••••••••••••••••••••	26
		27,	••	•••••	28
**		28,	•		29
**		29,	**	••••••	30
"		30,	"		32
**		31,	**		33
**		32,			35
٠.		33,	••	••••••	37
••		34,	**	•••••	40
**		35,	**		45
**		36,	••		55

STEEL WIRE.

110	3. 1 10 0,	ре	٠.	•	 •	•	•		٠	•	•	•	•	•	•	•	•		•	٠	•	•	• •	٠.	•	•	٠	- 4	\$10	23
••	7 to 9,	**												 																24
**	10 to 11,	**											٠.																	25
**	12,	• •																												26
••	13,	44												 																28
••	14,	**																												30
••	15,	**																												
**	16,	••			 																					. ,				33
**	17.	••																												
**	18,	**																												
••	19,	"																												38
**	20,	**																												40
**	21,	••										 													 					50
	22																													٤.

TINNED WIRE.

No	s. o to 9, 1	per l	ь													 				\$ 0	15	5
••	10 to 11,	"		 								 									16	ó
••	12 to 14,	4.				 		 									 				17	,
••	15 to 16,	**			•	 								 							17	, 3
••	17,	**				 	 	 													18	3
	18 to 20,																					
	21 to 22,																					
	_																					

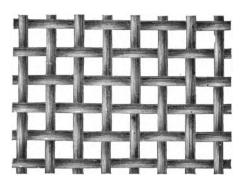


Fig. 1269.- No. 31/2 MESH, No. 13 WIRE.

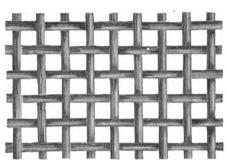


Fig. 1270.-No. 4 Mesh, No. 14 WIRE.

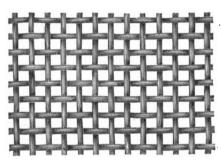


Fig. 1271.-No. 6 Mesh, No. 16 Wire.

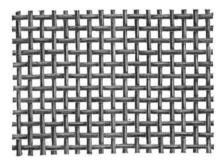


Fig. 1272.—No. 8 Mesh, No. 18 Wire.

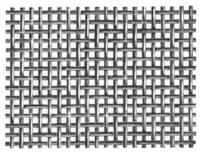


Fig. 1273.-No. 10 MESH, No. 19 WIRE.

GALVANIZED WIRE.

No	s. o to	6,	per l	b.								٠.							 	.!	5 0	26	
4.	7 to	9,	**								 		 									17	
**	10 to	11,	**						 		 		 									18	
**		12,	44					٠.			 		 									3 0	
**		13,	**								 											22	•
**		14,	**						 		 		 									24	
**		15,	**					٠.	 		 		 									26	
**		16,	**		: .						 		 									28	
* **		17,	**					٠.					 									30	
**		18,	••										 									32	
**		19,	• •								 											34	
**		20,	**				 						 						 			36	

BRASS AND COPPER WIRE.

Nos. o to 20,			Low Brass.	Gilding and Copper. \$0 45
1105. 0 to 20,		34	4 0 30	40 43
" 21	· · · · •	35	39	46
" 22	• •	36	40	47
" 2 3		37	41	48
" 24		39	43	50
" 25		42	46	53
" 26		44	48	55
** 27		46	50	57
" 28	•••	49	53	60
" 29		52	56	63
" 30 · · ·		5 5	59	69
" 31		59	63	75
" 32		63	67	81
" 33		67	71	90
" 34		71	75	1 00

Spring Wire 2 cents per lb. advance.

Wire straightened and cut, smaller than No. 8, and not less than 2 feet lengths, 45 cents.

Wire and Rods less than 2 feet lengths, special rates.
12 cents per lb. extra for spooling on one pound spools.

HEAVY CRIMPED SPARK CLOTH.

FOR LOCOMOTIVES.

(Figs. 1260 to 1273.)

				(Fig	gs. 1269 to 1	273.)			
No	. з М	lesh,	of No.	12	Iron Wire	(Stub's	Gauge), per	
	squa	re foo	ot				· • • • • • •	🕏	55
No	. 3 N	fesh,	of No.	13	Iron Wire,	per squ	are foo	t	48
••	3		**	14	**	**	**		40
*	31/2		**	12	**	**	**		70
**	31/2	**	**	13	**	**	**		55
••	31/2	••		131	4 "	**	**	••••	50
	31/2	**	**	14	**	**	**		48
	31/2	"	**	15	**	**	**		40
	4	**	**	13	**	**	**		65
	4	"	**	14	**	**	**		55
	4	**	**	15	**		**		45
	2 × 5	**	**	14	**	. **	**		55
••	5	4.	**	14	**	**	**	•••	70
	5	**	61	15	**	**	**		60
••	5	**	**	16	**	**	**		50
••	6	**	**	15	**	**	**	•••	75
	6	**		16	**	**	**		60
**	6	**		17	**	**	**		50
••	8		**	17	**	**	**		75
	8	**	**	18		**	**	• . • •	60
••	8			19	**	••	**	• • • •	45
	10	**		19	**	**	**		80
	10		**	20	**	**	**		62
	10	**		21	**	**	**		50
	12		**	20		**	**	•	75
	12		**	21	**	**	**		60
	12		**	22	**	••	**	••••	50

For Steel Cloth as above, add 10 per cent to net price



ROLL WIRE STRAIGHTENER.



Fig. 1274.-No. 1.

Several sizes of the above, varying from 10 to 21 inches long, with Rolls from 1 to 2 inches diameter. Parties desiring Straighteners of this kind should state the numbers of wire they desire to straighten, and the size and price of the style best adapted for the purpose will be furnished.

Average price about.....\$25 00

ROLL WIRE STRAIGHTENER.

SPECIAL STYLE.

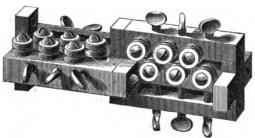


Fig. 1275.

Designed for small wire. Is 8½ inches long and 4½ inches wide, and weighs 7 lbs. Is capable of very fine adjustment, the Dies being held at each end by Thumb Screws. These Straighteners are so constructed that any number of them may be attached together, if desired.

THE ROLL STRAIGHTENERS illustrated above are designed and constructed for use on Automatic Wire-Working Machinery, and also for parties who either do not have power or prefer this kind. They can be held in a vise or fastened to a post or bench, and the wire straightened by being pulled through with a small hand vise or pair of pilers.

ROTARY WIRE STRAIGHTENER.

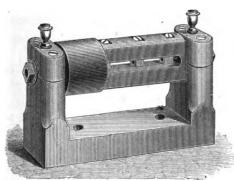


Fig. 1276.-No. 1.

Has 3 Adjustable Dies. Is 13 inches long, 9 inches high, and weighs 40 lbs.

Each.....\$25 00

ROTARY WIRE STRAIGHTENER.

No. 2.

Same style as No. 1, has 4 Adjustable Dies. Is 16 inches long, 9 inches high, and weighs 43 lbs.

Each.....\$30 00

An Adjusting Wrench, and different sizes of Dies and Bushings are furnished with each machine, without extra charge.

COMBINED WIRE STRAIGHTENING AND CUTTING MACHINE.

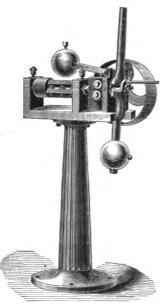


Fig. 1277.-No. 1.

The Geared Rolls and Rotary Straightener on this machine are run from the same countershaft. This countershaft should be so constructed as to run the Rotary Straightener 2000 revolutions per minute. A small pulley is needed on the countershaft (by the side of the pulley which drives the straightener) to run the Geared Rolls by a half twist of the belt. The pulley to drive the Straightener should be six times as large as the pulley which drives the Rolls. The machine stands 4 feet high over all, and weighs 300 lbs.

WIRE REELS.



Fig. 1278.

No. 1 stands 3 feet 6 inches high, weighs 15 lbs. The fingers on the arms can be spread to hold coils of wire whose inside dimensions do not exceed 2 feet.

No. 2, same height as No. 1, weighs 35 lbs. Will hold any ordinary coil of wire.

COMBINED WIRE STRAIGHTENING AND CUTTING MACHINE.

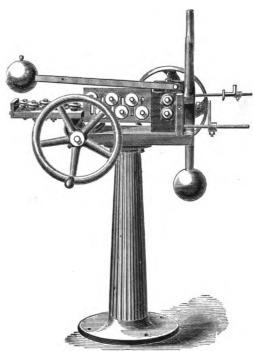


Fig. 1279.-No. 2.

This machine has been constructed to meet the wants of those who do not have power. It can be used with or without power, as desired. Is similar in construction and measurements to the No. I Machine, with the exception of the Straightener.

Cach......\$100 00

In ordering Machines state the numbers of wire desired to be cut and straightened.

ROTARY WIRE STRAIGHTENER.

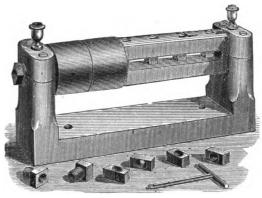


Fig. 1280.-No. 5.

Has 3 adjustable Dies and Loose Pulley. Is 18 inches long by 9 inches high, and weighs 50 lbs.

ROTARY WIRE STRAIGHTENER.

No. 4.

Same Style as No. 1, but has in addition a Loose Pulley, as shown in No. 3, is 16 inches long, 9 inches high, weighs 43 lbs.

Each......\$27 00

An Adjusting Wrench, and different sizes of Dies and Bushings are furnished with each machine, without extra charge.

I can furnish Special Sizes of Straighteners to straighten any size of wire larger than No. 1 Stubb's Gauge, if desired.

For Nippers and Pliers see Machinists' Tools.

COMPOUNDS.

ROUND RUBBER BELTING.

Albany Lubricating, per lb. \$0 40 Oleine " 35 Houghton Boiler Compound, per gall I 50 Downer's " I 50 Noyes' Patent Liquid Cooling Compound, per gall Bidge's Patent Lubricant, per lb.	14 inch, per foot
Dennison Cooling, Soluble Glass for Protecting Wood from Sparks, per gal	ROUND RAWHIDE BELTING.
Cherry Heat Welding Compound	1/2 inch, per foot
OAK-TANNED LEATHER BELTING	36 " "
Single Bands, 1 inch\$0 09 Single Bands, 23 inch	COTTON BELTING.
21 21 20 3 56 3 56 3 90 21 21 28 3 90	1 inch, per foot
" " 3 " 33 " " " 30 " 4 22 " 312 " " 312 " " 32 " 4 86	11/2/" ()
" " 4½ " 5 18	2½ " "
57 38 5 50 38 5 50 40 5 82	3½ " "
" " 7 " 8i " 48 " 7 10	4½ " " 128 16 " " 1 26 " 1 1 26 " " 1 1 26 " 1 1 26 " 1 1 26 " 1 1 26 " 1 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26 " 1 26
" " 9 " 1 05 " " " " 1 " " 07	5½ " " i i i i i i i i i i i i i i i i i
" " 11 " 29 " " " 14 " 14	
" " 12 "	CUT LACING.
" " 14 "	Size
" " 16 " 1 94 " " " 16 " 16 " 16 " 20	Per 100 feet\$1 00 1 25 2 00 2 75 3 25
" " 17 " 2 10 " " " 18 " 20 25 " " " 19 " 25 30 30	
" " 21 "	TIPPED LACING.
" " 22 " 2 90 " " " " 53	Will Lace the below No. of Motes in Length of Lace. Width of Bels. Beld Daced double. Per Gross
Twist Belting larger than ½ inch is made with a Core. The above prices adopted by Belt Manufacturers' Association, December	12 inch. 15 inch. 1 inch. 2 \$1 50 15 " 1¼ & 1½ inch. 2 1 87½
14, 1876.	18 " 14 " 12 2 2 2 5 2 2 0 " 14 " 2 2 2 5 0
RUBBER BELTING.	2 feet. # " 2½ " 3 3 25 5 ∞
2 Ply, 1 inch\$0 07 Ply, 18 inch	3 4 3½ 11 4 7 00 3 4 3½ 11 5 8 50
" 1½" 8½ 20 " 190 1 90 " 1½" 10 " 22 " 20 12 12 1	4 " 18 " 5 & 51/2 " 5 10 50
" 2" "	7 48 " 6 17 00
17 4 Ply 2 21 31 31 31 31 31 31 31 31 31 31 31 31 31	5½ "
" 3½ "	6½ " 18 " " 30 00
" 3 "	PAGE'S PATENT LACE LEATHER.
" 4 "	\sim
" 6 " 1 07 " 11 " 1 18	Full Sides, per lb\$0 85
" 8 "	V OR ANGULAR BELT.
" 10 " 90 " 14 " 1 54 " 1 66	$\langle () \lambda \rangle$
" 12 "	rupaling foot.
" 14 "	repulley nor running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per running per runni
" 16 " 1 50 " 24 "	inch. inch. inch. inch. inch. 32
For purposes where unusual strength is required—equivalent to double leather—we make 5 or 6 Ply Belts to order, at one week's notice, at an ad-	30 4 3 5 " 3 40 36
vance on 4 Ply prices of 25 per cent for each additional ply.	31" 85 10 31 4 " 300 48
ENDLESS RUBBER BELTS,	1½ 3 1,00 10 3x 5 3.75 48 1½ 4; 1¥30 24 3½ 6 440 48
	134 32 120 18 372 4 3 40 48 134 41" 1 55 30 3½ 5 " 4 00 48
Of any width or length, made to order, at ten days' notice, at current list prices, with an additional charge for the joining, equal to the price of 3 feet	2 3." 140 24 3½ 6" 480 48 2 4" 180 30 4 4" 380 48
of the Belt. Full rolls of Belting, as manufactured for the trade, measure from 250	2½ 3 " 1 60 24 4 5 " 4 70 48 2½ 4 " 2 00 32 4 6 " 5 50 48
to 300 feet long; but we cut Belts to order of any length required.	214 5 " 2 50 36 5 4 " 4 80 48
For Belts less than 6 inches wide, the "3 ply" is sufficiently strong, unless the work is unusually heavy for the width. Belts wider than 6 inches	2½ 4 " 2 30 32 5 6 " 7 00 48 2½ 5 " 2 80 35 6 4 " 5 80 48
should not be less than "4 ply," unless the work is unusually light for the width	2¾ 4 " 2 55 36 6 5 " 7 20 48 2¾ 5 " 3 10 38 6 6 " 8 50 48

CORDAGE.

MANILA ROPE.	
1½ inch circumference and upwardper lb. \$0 15	
12 thread, or ⅓ inch diameter	3½ 5
Hay Rope, 2, 3, 4, or 5 thread	
Dott and Tome Rope	1/2 1/4
Stave, Leather, and Hop Twine	%
SISAL ROPE.	
1½ inch circumference and upward per lb. 11	-
22 thread, or ¾ inch diameter	1/2
Hay Rope, 2, 3, 4, or 5 thread	1. /
Tarred Rope and Lath Yarn	% /
NEW ZEALAND ROPE.	
1½ inch circumference and upward	34
6 and 9 thread, or 1/4 and 5-16 inch diameter	-
Hay Rope, 2, 3, 4, or 5 thread.	%
RUSSIA HEMP.	
White Rope	}
Tarred Rope and Ratline	
Spun Yarn " 12 Bolt Rope " 17	: 1/2
Marline, Houseline, Rounding, and Hambroline	,
. AMERICAN HEMP.	
White Rope	1 .
	1/2
Lath Yarn	
Sash and Bell Cord. "25 to 35	
OAKUM	
Best Oakumper lb. 10	,
•• • • • • • • • • • • • • • • • • • • •	% %
	^
CORPORATA DACTIVA	
STEAM PACKING.	
STEAM PACKING. RUBBER SHEET PACKING.	
RUBBER' SHEET PACKING. Fibrous Packing, 1-16 inch or less in thickness	6 o f
RUBBER' SHEET PACKING. Fibrous Packing, 1-16 inch or less in thickness	50
RUBBER' SHEET PACKING. Fibrous Packing, 1-16 inch or less in thickness	50 65 55
RUBBER SHEET PACKING. Fibrous Packing, z-z6 inch dr less in thickness	50 65 55 00
RUBBER, SHEET PACKING. Fibrous Packing, 1-16 inch or less in thickness	50 65 55 00 50 60
RUBBER' SHEET PACKING. Fibrous Packing, 1-16 inch or less in thickness	50 65 55 00 50 60 80
RUBBER, SHEET PACKING. Fibrous Packing, 1-16 inch or less in thickness	50 65 55 00 50 60 80
RUBBER, SHEET PACKING. Fibrous Packing, 1-16 inch or less in thickness	50 65 55 00 50 60 80 le.
RUBBER' SHEET PACKING. Fibrous Packing, 1-16 inch or less in thickness	50 65 55 00 50 60 80
RUBBER' SHEET PACKING. Fibrous Packing, 1-16 inch or less in thickness	50 65 55 00 50 60 80 le.
RUBBER' SHEET PACKING. Fibrous Packing, 1-16 inch or less in thickness	50 65 55 00 50 60 80 le.
RUBBER' SHEET PACKING. Fibrous Packing, 1-16 inch or less in thickness	50 65 55 50 50 60 80 le. 20 25 50 25 50 80 80
RUBBER' SHEET PACKING. Fibrous Packing, 1-16 inch or less in thickness	50 65 55 50 50 60 80 le. 20 25 50 25 50 80
RUBBER' SHEET PACKING. Fibrous Packing, 1-16 inch or less in thickness	50 655 555 600 500 600 800 800 800 800 800 800 800 800 8
RUBBER' SHEET PACKING. Fibrous Packing, 1-16 inch or less in thickness	50 655 555 600 500 600 800 800 800 800 800 800 800 800 8
RUBBER' SHEET PACKING. Fibrous Packing, 1-16 inch or less in thickness	50 65 55 55 50 50 50 60 80 20 22 55 80 60 22 55 60 60 60 60 60 60 60 60 60 60 60 60 60
RUBBER' SHEET PACKING. Fibrous Packing, 1-16 inch or less in thickness	550 655 555 550 550 550 660 80 - 225 550 225 550 225 550 80 80 80 80 80 80 80 80 80 80 80 80 80
RUBBER SHEET PACKING. Fibrous Packing, 1-16 inch or less in thickness	550 65 555 50 50 50 66 88 80 80 22 55 80 80 80 80 80 80 80 80 80 80 80 80 80
RUBBER' SHEET PACKING. Fibrous Packing, 1-16 inch or less in thickness	50 65 55 50 66 80 80 80 22 55 80 80 80 80 80 80 80 80 80 80 80 80 80
RUBBER' SHEET PACKING. Fibrous Packing, 1-16 inch or less in thickness	50 65 55 50 66 80 80 80 22 55 50 80 80 80 80 80 80 80 80 80 80 80 80 80
RUBBER' SHEET PACKING. Fibrous Packing, 1-16 inch or less in thickness	50 65 55 55 50 66 80 20 22 50 25 50 80 80 80 80 80 80 80 80 80 8
RUBBER' SHEET PACKING. Fibrous Packing, 1-16 inch or less in thickness	50 65 55 55 50 66 80 20 22 50 25 50 80 80 80 80 80 80 80 80 80 8
RUBBER SHEET PACKING. Fibrous Packing, 1-16 inch or less in thickness. Plain cloth insertion, 1-16 inch or less in thickness. Plain cloth insertion, 1-16 inch or less in thickness. Plain cloth insertion, 1-16 inch or less in thickness. Pure Vulcanized Sheet Gaskets, Washers, and Rings made of pure Vulcanized Rubber. Fibrous Packing. per lb. 1 oo to 1 Fibrous Packing. per lb. Square Piston and Valve Rod Packing of an sizes, cut to the most exact dimensions, The above Packing is made on sheets of any thickness or length, and about one yard wider for cutting rubber use a sharp knife and keep it wet. Soap Stone Packing. per lb. Eagle Selden's Empire "Gum Core Packing. Tucks, Round or Square. Manhattan Packing. per lb. 1 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch,	50 65 55 55 50 66 80 20 22 50 25 50 80 80 80 80 80 80 80 80 80 8
RUBBER' SHEET PACKING. Fibrous Packing, 1-16 inch or less in thickness. Plain " 3-32 and apparal in thickness. Plain " cloth insertion, 1-16 inch or less in thickness. " " " " " and upward in thickness. Pure Vulcanized Sheet. " " Fibrous Packing and upward in thickness. " " Fibrous Packing. The above Packing is made of pure Vulcanized Rubber. per lb. 1 00 to 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	50 65 55 55 50 66 80 20 22 50 25 50 80 80 80 80 80 80 80 80 80 8
RUBBER SHEET PACKING. Fibrous Packing, 1-16 inch or less in thickness. Plain cloth insertion, 1-16 inch or less in thickness. Plain cloth insertion, 1-16 inch or less in thickness. Plain cloth insertion, 1-16 inch or less in thickness. Pure Vulcanized Sheet Gaskets, Washers, and Rings made of pure Vulcanized Rubber. Fibrous Packing. per lb. 1 oo to 1 Fibrous Packing. per lb. Square Piston and Valve Rod Packing of an sizes, cut to the most exact dimensions, The above Packing is made on sheets of any thickness or length, and about one yard wider for cutting rubber use a sharp knife and keep it wet. Soap Stone Packing. per lb. Eagle Selden's Empire "Gum Core Packing. Tucks, Round or Square. Manhattan Packing. per lb. 1 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch, 1 as 35. Winch, 1 so. Over 14 inch,	50 65 55 55 50 66 80 20 22 50 25 50 80 80 80 80 80 80 80 80 80 8



JONES' PATENT PACKING SPRINGS.

Per inch of diameter of Cylinder, \$1 25 Parties ordering these springs should send the following dimensions: diameter of Cylinder; depth and width of packing space; thickness of packing rings.

MARTIN'S PATENT PACKING RINGS.

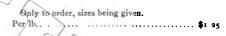
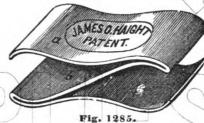


Fig. 1284.



HAIGHT'S PACKING SPRINGS.

Prices according to size

In bales of about four hundred pounds. We also have, for the gonvenience of our customers, small bales of one hundred pounds, for which we charge one half cent per pound extra.

0.	¬1—Copr	6	ъ рс	r lb.	6 0 12 /	⊸No.	1—Ç	olore d		 .	pe	r lb.	\$0 o8
	ı-Machined,	New		4	13	"	2+	" /		٠.	17.	**	об
	ı-Washed								-:				
		4					\	. \					

Imported Sweat or Wiping Cloths, per dozen \$3 00

HAIR AND WOOL FELTING.

FOR COVERING MARINE, LOCOMOTIVE, AND STATIONARY BOILERS.

The best material to prevent loss of heat by condensation or radiation. It is made from pure hair, from one half inch to two inches in thickness, backed with wood felting one eighth of an inch thick, tacked and fastened securely to it

This article is warranted to save twenty per cent in fuel or many times its cost. It is made in strips six feet wide, and can be cut in any lengths.

HAIR, WOOL BACK, OR HAIR AND CANVAS.

No. 1- inch thic	k, per square foo	ot, \$	j
((100 / 00	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\ .	18
" 3—7 3 4 " "	\	<i> </i>	20
" - = "	\"\"\"\		22
"-5-132"			25
اـــــا			

ALL HAIR.

			**	 61
			"	 8
۰ 5–	-11/2 "	**	••	 16

We also have a very heavy Wool Felt, for city car boxes, which gives entire satisfaction Per pound, \$2 00.

Polishing Felt, per pound, \$2 50.



	n, of Belt, doz. pair.	in. 1/8	5-32 2 75	3-16 2 25	7-32 2 25
	n. of Belt. doz. pair.	in. ¾ \$2 25	9-32 2 50	5-16 2 75	11-32 3 00
Fig. 1286.	n. of Belt. doz. pair.	, in. ¾ \$3 25	7-16 3 75	½ 4 50	9–16 5 50
Diam. of Belt, in \$\frac{5}{8}\$ 11-16 \$\frac{3}{4}\$ Per doz. Pair\$\frac{5}{7}\$ 25 8 25 10 0	₹8 16 50	15-16 20 0 0	1 24 00	1½ 33 ∞	1¼ 53 ∞

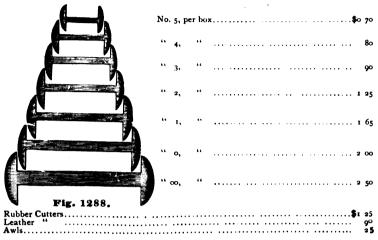
ROUND BELT COUPLINGS.

Fig. 1287.

BELT HOOKS.

No 15	14	13	12	11	10
Per 1000\$1 75	2 00	2 25	2 50	2 75	3 00
No	8 4 00	7 5 00	6 7∞	8 50	10 00

BLAKE'S PATENT BELT STUDS.



BELT PUNCHES.



Fig. 1289.

Nos. 1 to 0	per aoz.,	Kouna,	₹2 50; (Ovai,	₱ 2 75
" 7 to 9,	**	**	2 75;	**	3 50
" 10 to 12.	, "	**	300;	**	3 50
" 13 to 16.	, "		4 50;	••	4 75
	" 7 to 9, " 10 to 12.	" 7 to 9, " " 10 to 12, "	" 7 to 9, " " " " " " " " " " " " " " " " " "	" 7 to 9, " " 2 75; " 10 to 12, " " 3 00;	" 10 to 12, " " 3 00; "



	Fig. 1291.										
Large	Round	. single l	nandle.	from	36	to 7	ineh	, per do	Z		\$10 00
-46		, 5111,	**	44	1	to 15	í "				15 00
**		double	**	**	13/8	to ik	(· ·	"			
**		404	4.6	**	13%	to 15	á "	**			, 24 00
**	**	**	**	**	11/4	to a	٠.,	**		• • • • • • • • • • • • • • • • • • • •	•
	**	**	**	**	21/2	to 3	**	••			

BAUER'S PATENT BELT PUNCH.

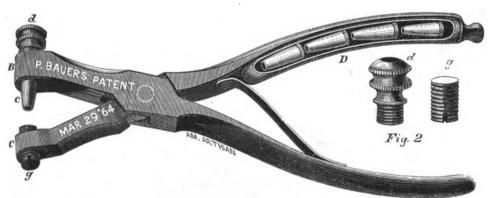
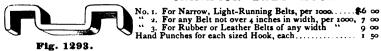


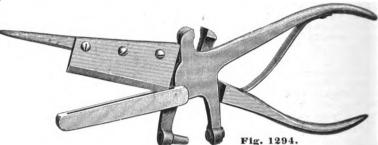
Fig. 1292.

This instrument is for punching any of the substances usually punched with spring punches. It differs from others in several points. First, the socket punch, c, is not riveted in the jaw, B, as usual, but is held in by a screw with a milled head, d, so that it can be quickly withdrawn, and another put in its place. Second, there is a tube, D, to hold four or more spare punches, which may punch holes of different sizes; and when any or all these punches are worn out, others can be purchased. Thus the instrument may last for an age, whereas a common spring punch is useless as soon as its one punch is worn out or broken. All sizes of punches made to order, and warranted to fit stocks now in use.

CHAMPION BELT HOOK.



FOSTER'S PATENT COMBINATION BELT PUNCH.



Extra Tubes, per dozen, net......\$1 75 Per dozen.....\$24 00 BELT AWLS.

Fig. 1295.

Cast Steel Blades, Black Ebony finished Handles, per doz......\$2 35

BELT AND HOSE COPPER RIVETS AND BURS.

Nos	7	8 50	9 52	10 54	11 56	12 58	13 60	14 6s	10 75
Brass Rivets not less tha		•	-	• •	Rivets	and Rurs		-,	cular
sizes and patterns, special	nrice. n	ot less	than corr	espond	ing rates			to passi	

PATENT BELT TIGHTENER.

FOR DRAWING BELTS TOGETHER FOR THE PURPOSE OF LACING THEM.

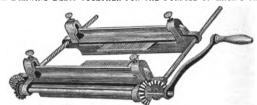


Fig. 1296.

Size, inch. 6 8 10 12 14 16 18 20 22 24 26 30 Each ...\$15 00 16 00 18 00 20 00 22 00 23 00 25 00 26 00 28 00 30 00 34 00 36 00

LYLE'S PATENT REVOLVING PUNCH.



Fig. 1297.

SIDE SPRING PUNCHES.



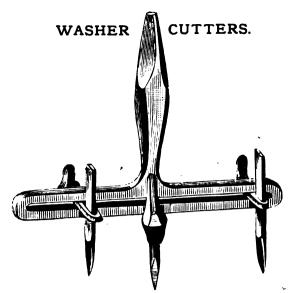
Fig. 1298.

COMMON SPRING PUNCHES.



Fig. 1299.

Nos..... Per dozen



PATENT WASHER CUTTERS.

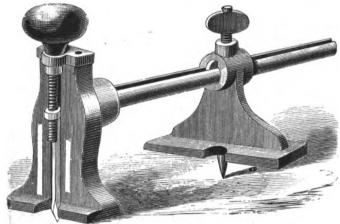


Fig. 1301.

DOUBLE WASHER CUTTERS.

USED WITH ORDINARY BRACE.

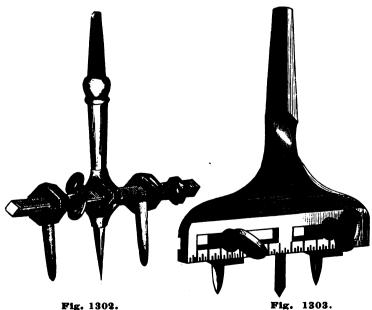


Fig. 1302.

Per dozen.....\$14 00

Per dozen......\$18 00

Fig. 1304

Per dozen......\$18 00

HAND PUNCHES FOR BELTS.



Best Cast Steel, per dozen.....\$2 50

BELT AWLS.



Best_Cast Steel, per dozen.....\$2 00

SPRING KEYS.



Fig. 1307.

No.	000,	are	12	Wire	Gauge, for	7-32 i	n. hole i	n 5%	in.	Bolts,	per	1000,	\$5	00
"	00.	"	12	"	u	7-32	**	34		"		46		50
"	0.	**	12	"	44	7-32	**	7/8		• •	4	"	6	00
44	1.	44	TI	"	**	· 🗸	44	56		"	•	**	6	50
	114	**	11	**	44	ĨŽ.	"	%		44	4	**	6	75
	2.	"	10	4.	44	9-32	• •	5%		••	• •	66	7	00
"	3,	"	10		44	9-32	**	7/8		66	14	44	7	50
"	3, 4,	**	10	**	44	9-32	**	1		"	4	"	8	00

SPRING COTTERS.



Fig. 1308.

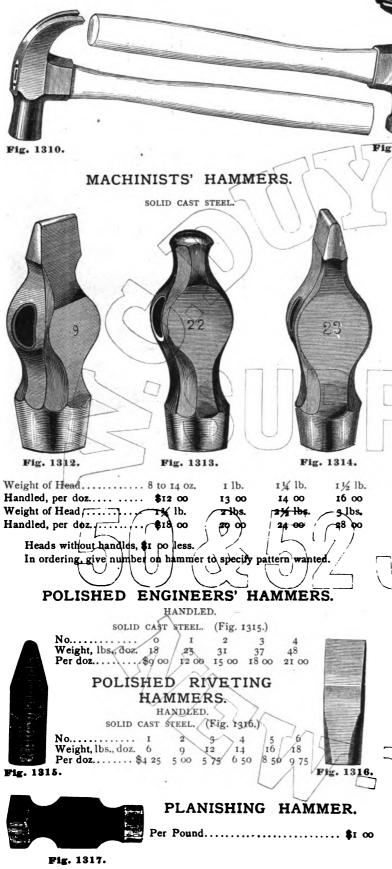
No.	30.	are	13	Wire	Gauge,	for	3-32	in.	hole in	1/2	in.	Bolts,	per	1000	\$3	50
"	31,	**	13	**	10		3-32	**	"	34			•	••	3	75
44	32,	**	II	"	**		1/8	4	"	34			4	"	4	50
**	33,		11	**	44		1/8	**	"	%				"	4	75
**	34.	**	7	**	"		3-16	44	**	7/8				"	7	00
	35.	**	7	**	44		3-16	"	" I			" "		"	•• • 7	20·
"	36,	u	4	**	44		1/4	44	" 1	["			13	00
"	37.	44	4	"	**		14	44	" 1	1/4			•	**	14	00
"	38.	44	ĭ	44	44		5-16	**	"]	X.			•	"	19	00
44	39,	**	1	"	**		5-16	"	" 1	1/2		•	•	44	,21	00

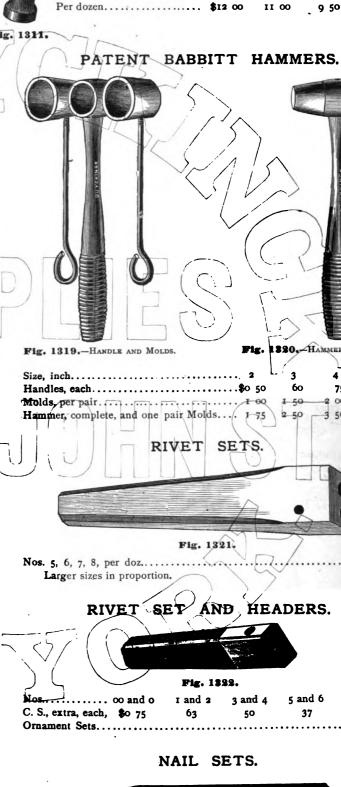
FLAT SPRING KEYS.



Fig. 1309.

The prices of these vary with the size. We can make them any size and in any quantity.





NAIL OR CLAW HAMMERS.

11/2

ı lb.

11/2

r lb.

3

7 1/2 OZ.

6 50

3

7 0%.

7 25

13 OZ.

12 oz.

75

2 00

3 50

1 00

2 50

4 50

7 and 8

32

Adze Eye, No.....

Adze Eye, Bell Face, No....

Weight, each...... 11/2 lb.

Per dozen...... \$11 25

Weight, each..... 11/2 lb.

Fig. 1323.

Large,

COPPER HAMMER. Weighing each 1 to 10 lbs., per lb... \$0 50

Fig. 1318.

SNIPS FOR CUTTING METAL.

HACK SAWS AND FRAMES,

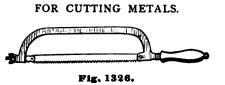


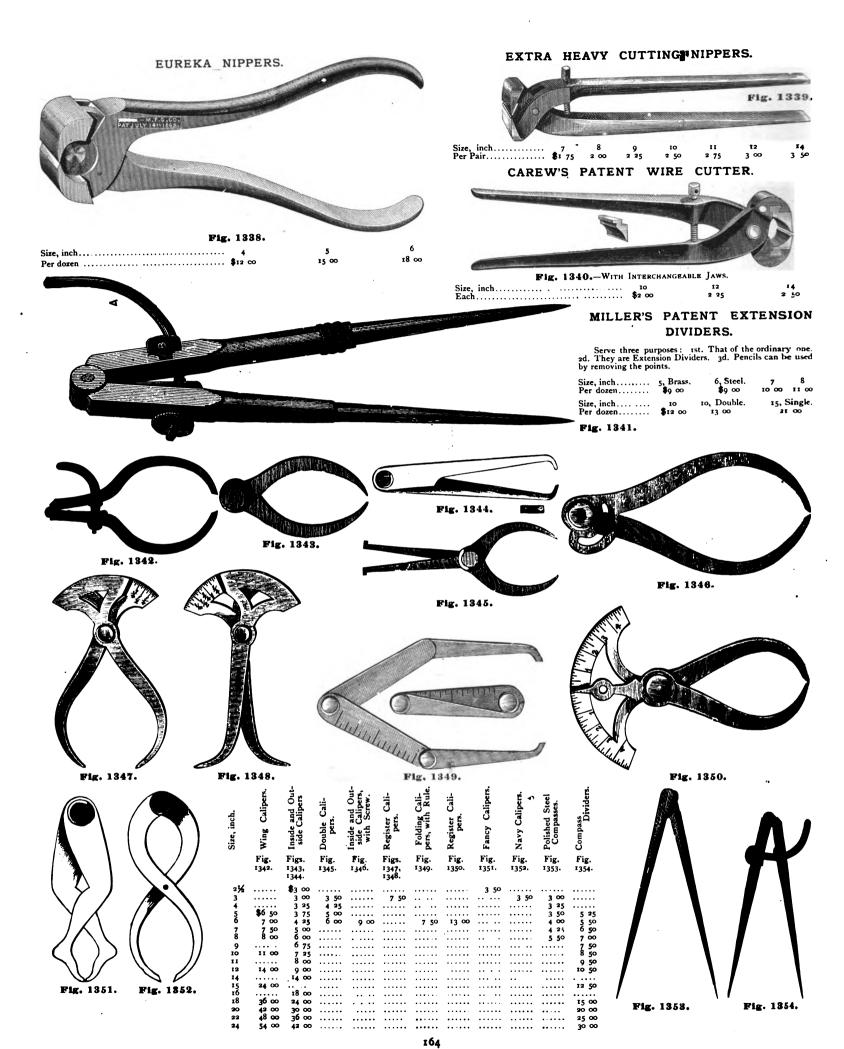
Fig. 1324.—HAN	D.			Fig. 13	325.—BE	сн.	
Cutting, inches, 2½ Hand, each\$1 50		3½ 2 00		4½ 3 00			
Cutting, inches, 6 Bench, per pair, 3 50	7 4 00	8 5 00	83/8 6 00	85% 700	9 8 oo	10½ 12 00	12 13 50

STUBS' HAND SNIPS.

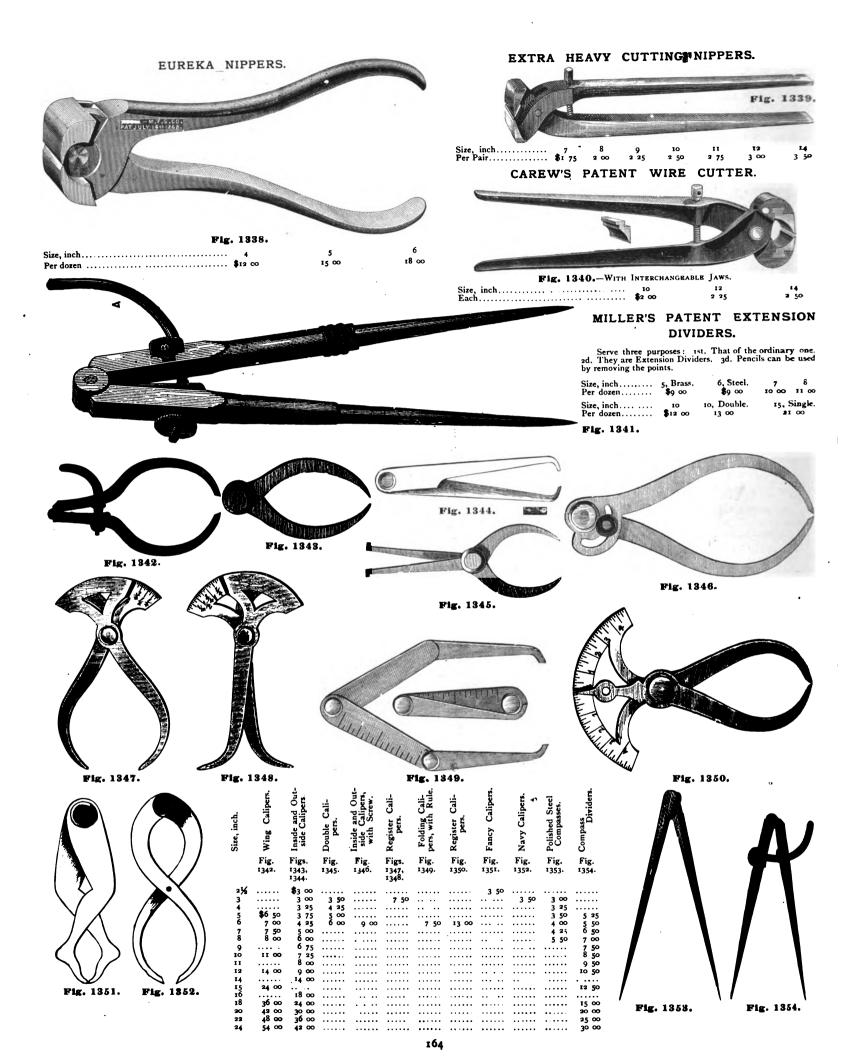
Size, inches..... 4 6 8 • 10 12 Best American Frames, per doz., \$16 00 18 50 21 50 24 00

Size, inches	7 8 9 10 Stub's Frames, with Blades	, " \$18 00 21 60 25 25 28 80 32 40 39 60 46 80 " 1 80 2 50 3 00 3 60 4 20 5 40 6 60
	NIPPERS AND PLIERS	
Fig. 1327.—RQUND NOSE PLIERS.	Fig. 1328.—FLAT NOSE PLIERS.	Fig. 1329. STOCKINGER PLIERS.
Fig. 1327Adol No Rose Files.	Fig. 1020.—FERT NOSE TELEKS.	S TOOM TOOM TO SEE
Fig. 1330.—LONG FLAT NOSE PHERS.	Fig. 1331.—LONG ROUND NOSE PLIERS.	Fig. 1332.—END CUTTING PLIERS.
Fig. 1333SIDE CUTTING PLIERS.	Fig. 1384.—SIDE CUTTING PLIERS.	Fig. 1335.—SIDE CUTTING PLIERS.
	WARRANT Size, inches	
	Flat or Round Nose Pliers \$4 13	5 5 5 47 6 40 7 70 8 65 12 00 8 5 5 95 6 96
	End Cutting Pliers 5 68 Side " Black, Raised Cutter	85 5 95 6 96 68 7 60 20 80 12 10 14 40 18 00
Fig. 1336.—DIAGONAL CUTTING PLIERS.	" " Flat Cutter	3 40 9 00 9 75 10 50 11 65 14 90
Fig. 1886DIAGONAL COTTING TEMACE.	Diagonal Cutting Pliers	
Flat, Long Nose, Stockinger, Round, Ha	If Round, and Snipe Nose. Cutti	ng Nippers, End and Side.
Size, inches	6½ 7 7½ 8 Size, inches 5 14 50 16 80 19 80 24 00 Per dozen\$12 10	EV ~ 6 BV 7 7K 8
Bell Hangers' or Bottle		Cutting Pinghers.
\ \ \ \	13 20 16 80 21 60 28 80 Per dozen	
w	IRE SHEARS AND PLIERS COMBI	NED.

V V	VIRE SH	EARS ANI	PLIERS	COMBINI	ED.
			$\mathcal{A}(\mathcal{A})$		•
	•				
			garante anno 1880		
			Fig. 1337.		



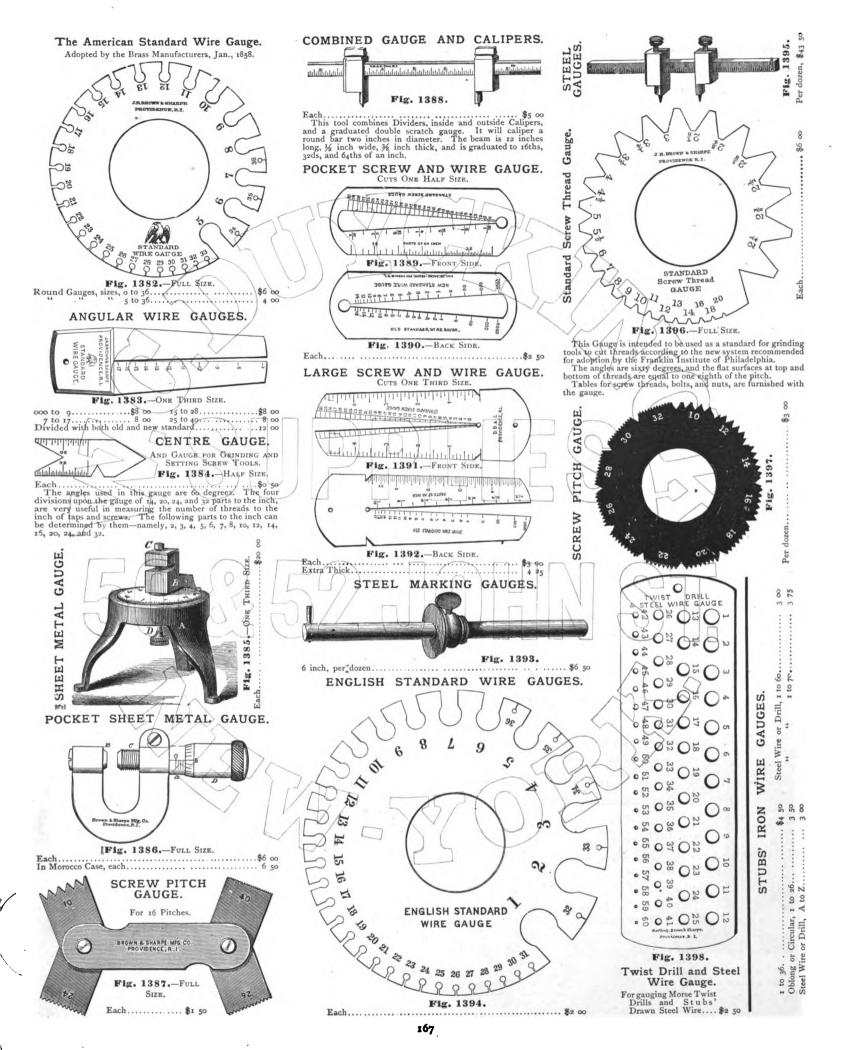
CALIPERS. Fig. 1359. Fig. 1356. Fig. 1358. Fig. 1355. Fig. 1357. Fig. 1362. Fig. 1363. Fig. 1364. Fig. 1360. Fig. 1361. Fig. 1367. Fig. 1368. Fig. 1366. Fig. 1365. Sizes, inches. Fig. 1355—Spring Calipers, per dozen. " 1356— " Screw Calipers, per dozen. " 1357— " Keyhole " " " 1358— " Inside " " " 1359—Right and Left Hand Screw Calipers, per dozen. " 1360—Spring Dividers, per dozen. " 1361— " " " " 1362—Patent Helical Coil Spring Calipers, per dozen. " 1363— " " " Dividers, " " 1364—Firm Joint, Outside or Inside Calipers, per dozen. " 1365—Call's Patent Inside Calipers, per dozen. " 1365, C367—Star Calipers, Inside and Outside, per dozen. " 1368—Star Compasses, per dozen. 6 1 1/2 2½ \$11 50 3 11 50 11 50 31/2 15 00 17 50 15 00 15 00 15 50 17 50 11 50 11 50 11 50 13 75 8 00 10 00 10 00 10 00 7 50 11 **0**0 9 75 9 00 12 00 9 00 12 00

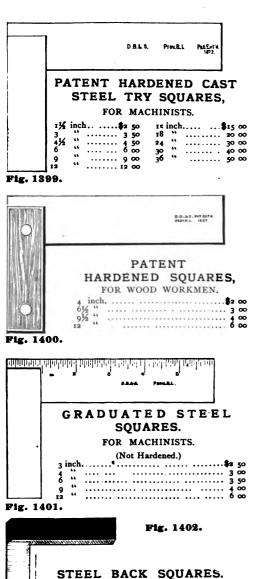


CALIPERS. Fig. 1359. Fig. 1356. Fig. 1358. Fig. 1355. Fig. 1357. Fig. 1360. Fig. 1361. Fig. 1362. Fig. 1363. Fig. 1364. Fig. 1365. Fig. 1366. Fig. 1368. Fig. 1367. Sizes, inches. Fig. 1355—Spring Calipers, per dozen. " 1356— " Screw Calipers, per dozen. " 1358— " Inside " " " 1359—Right and Left Hand Screw Calipers, per dozen. " 1360—Spring Dividers, per dozen. " 1361— " " " " 1362—Patent Helical Coil Spring Calipers, per dozen. " 1363— " " " Dividers, " " 1364—Firm Joint, Outside or Inside Calipers, per dozen. " 1365—Call's Patent Inside Calipers, per dozen. " 1365—Call's Patent Inside Calipers, per dozen. " 1366, 1367—Star Calipers, Inside and Outside, per dozen. " 1368—Star Compasses, per dozen. 2½ \$11 50 Sizes, inches..... 1 1/2 3 11 50 11 50 31/2 6 5 15 00 15 00 17 50 15 00 15 50 17 50 10 00 11 50 11 50 11 50 13 75 8 00 10 00 10 00 7 50 11 00 9 75 9 00 12 00 ģ oo 12 00

TRIANGULAR STEEL RULES. SILVER PLATED TRIANGULAR STANDARD STEEL RULES. SCALES. Size, inch. 1 2 3 4 6 Each. \$0.25 40 50 75 1 00 Size, inch. 12 18 24 36 48 Each. \$2.00 3 00 4 00 8 00 12 00 لأنسنسن استشتت The rules in this list are divided five ways in parts of inches, clave hear Size, inch...... 3 Each..... \$0 60 No. 1 Graduations. No. 2 Graduations. No. 3 Graduations. 1st cor. 10, 20, 50, 100 10, 20, 50, 100 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 16, 32, 64 1 Fig. 1375. Graduations. 16, 64, 100 to the inch, whole length. 16, 32, 64 "" 20, 50, 100—12, 24, 48—16, 32, 64 to the inch. The 12 inch are divided only as follows: 8, 10, 12, 14, 16, 20, 24, 28, 48, 50, 64, and 100 to the inch No. 4 Graduations. No. 6 Graduations. STANDARD STEEL STRAIGHT TRIANGULAR BOXWOOD SCALES. EDGES. No. 5 Graduations. Of same width and thickness as Standard Rules. Fred La L'El La Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Contra de la Co No. 5 Graduations. 1st cor. 16, 32, 64 2d " 11, 14, 15, 17, 18, 19, 20, 21, 22, 23, 24, 25 3d " 26, 27, 28, 29, 30, 31, 33, 34, 35, 36, 37, 38 4th " 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 100 helishelsel / Fig. 1376. GEAR RULES IMPROVED VERNIER CALIPERS. FRONT SIDE. 24 inch are divided either 10 to 60 or 20 to 80. SHRINK RULES. CANCEL PROPERTY. 24% inch Steel Rule, shrink an one side and standard on the other. Divided on each side to 10, 20, 50, 100, 12, 24, 48, 16, 32, and 64 parts of an inch. \$4 50 24% inch Steel Rule, shrink on both sides, No. 1 Graduation. reignoation. 24 inch Boxwood Rule, ahrink on both sides, No. 7 Graduation 3 00 FIE. 1877. Fig. 1871.—HALF SIZE. HARDENED CAST STEEL POCKET A standard for testing the accurate adjustment of the calipers. STANDARD STEEL YARD VERNIER CALIPERS. MEASURÉS. Each \$3 œ FRONT SIDE. BACK SIDE. BEVELED STEEL STRAIGHT EDGES. Fig. 1878. HALF Spe BACK SIDE. Fig. 1372.-HALF Size. HARDENED STEEL STRAIGHT EDGES. STEEL CALIPER RULES. Fig 1379.-HALL SEE. Each...... In Morocco Cas richteletelete opposition der Fig. 1373. This cut is a fac-simile of one side of these rules. The other side is divided to 12ths, 24ths, 48ths, 8ths, 14ths, and 28ths on the outside, and upon the slide to 32ds and 64ths of inches. When closed they are 3 inches long. The Caliper can be drawn out to measure 2½ inches. The thickness of the rule is 1/2 inches. <u> រីបាយប្រជាព</u> STEEL STRAIGHT EDGES FOR DRAUGHTSMEN. 15 inch, long, 1½ inch, wide, 1-20 inch thick. 18 " 1½ " 1-20 " 24 " 1½ " 1-18 " 30 " 1½ " 1-18 " 2 16 2 16 3 15 1-20 1-20 1-18 1-18 1-16 1-16 Each / Fig. 1380.—HALP SIZE. DOUBLE CALIPERS. The same instrument, with adjusting screw, as shown in above cut: STANDARD STEEL RULES. CALIPER SQUARES. FRENCH MEASURE. Sizé, Metre...... 1-20 1-10 1-5 3-10 1/2 1 Each....... \$0 45 85 1 75 2 50 4 00 10 00 SQUARE STEEL RULES. Fig. 1374.—HALF SIZE. Whole length, 7½ inches, and will caliper 3½ ×4½ inch. Weighs but 4 ounces, and can be readily carried in the pocket. Very useful for machinists and others for selecting iron and steel, as both the width and thickness of flat bars can be tested at once. A larger size, with heavier bar and wood handle, is made for use in rolling or forging iron or steel. Extreme length, including handle, 12 inches, and will caliper 3½ × 1½ inches. Fig. 1369. Graduations. 8, 15, 32, 64 to the inch, whole length. 16, 32, 64, 100 " " " " " " " Fig. 1381. " like cut 4 50 4 35 5 \$0 5 \$0

Each...... \$24 00 166





3 inch, per dozen\$25 00 , 30 oo

\$..

KEY SEAT, RULE. me sur Fig. 1403. Each......\$3 00 Fig. 1404. STEEL SOUARES FOR MILLWRIGHTS. Both blades are 3-16 inch thick at the corner where they unite, and taper down to 1-16 inch at their ends. Both sides are divided to 8ths, 16ths, 32ds, and 64ths of inches. 3.3.4 S.Port. S.J. 4111111111111111111111 Full size of a inch Square. THIN STEEL SQUARES. FOR MACHINISTS AND DRAUGHTSMEN.



Fig. 1405.

HARDENED CAST STEEL

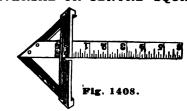
T SQUARE AND UNIVERSAL BEVEL.



Fig. 1407.

The head is 5 inches, and the tongue 8 inches long. Both parts are hardened, and ground straight and square. The tongue may be used at the extreme end of the beam. The wide side of the three cornered washer should always be placed next to the blade.

UNIVERSAL OR CENTRE SQUARES,



2	inch,	each	•	•	•	•			•			•	•			•														•	•			•		•	•	•	• •			3	0	ø
8	**	"																																										
		**	•	•	•	•	•	•	•	•	•		٠							•	•	•	•	•	•	٠.			•	•	•	•	•		•	•	•	•	•	•		Ş	9	20
ø			٠		٠	٠			•	•		•	•	• •	 ٠.		•	•	•	•	•	•	• •	•	٠	٠.	٠.	 •		٠	٠	٠	٠	٠		٠	٠		٠		•	o	C	æ

BEVEL PROTRACTOR,

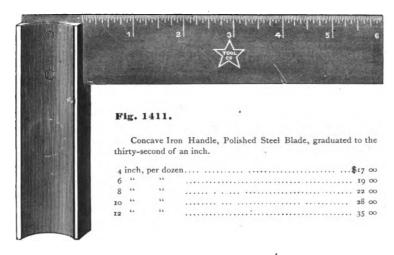
WITH SLIDING ARM, AND HALF CIRCLE DIVIDED TO DEGREES.

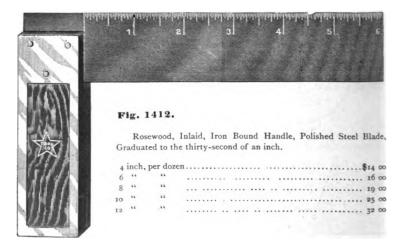


Fig. 1409.

П	STE	EEL SQUA	ARES.
11	2 inch.,	Pocket, Plain, p	er doz\$4 25
	2 "	" Marked,	" 5 50 " 6 50

MACHINISTS' TRY SQUARES.





Size, Fig.	1412, inch	ies										6	8	10	12
Polished	Rosewood	Handle,	Polished :	Steel Blad	e, Square	e inside	only, Gr	aduated to	the 16th of	an inch	. .\$4 !	р бо с	7 50	9 50	13 50
••	**	**	**	**	**	**	**	••	8th	**	3 !	O 4 50	oi 5 25	6 00	7 25
		**				**	and out.	**	16th	**	7 9	xo 18 50	0 to 00	12 00	z6 00

STAR BEVELS.



Fig. 1413.-No. o. MACHINISTS'.

Iron handle, heavy polished steel blades, graduated to the thirty-second of an inch.

Size, inch	6	8 ·	10	12
Per dozen	\$10 00	00 11	12 00	13 00



Fig.	1	4	1	4	·-	N	о.	1
------	---	---	---	---	----	---	----	---

Size, inch	. 6	8	10	12
No. 1—Polished rosewood handles, heavy polished steel blades, graduated to the				
sixteenth of an inch	\$ 8 oo	900	10 00	11 00
No. 2—Equal in every respect to No. 1,				
with the exception of graduation	6 50	7 50	8 5 0	9 50
No. 3—Polished rosewood handles, heavy				
polished steel blade, no graduation	4 50	5 00	5 50	6 00

SPRING STEEL RULES.



Fig. 1415.—MACHINISTS' SCALE.

Size, inch	I	2	3	4	6
Per dozen	\$3 00	4 80	6 00	9 00	12 00
Size, inch	9	12	18	24	36
Per dozen	18 00	24 00	36 oo	48 00	72 00

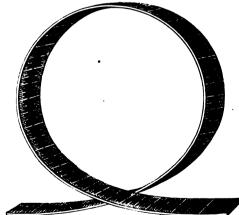


Fig. 1416.-FLEXIBLE RULE.

Size, inch:	12	24	36
Each	\$2 00	3 75	5 00

Shrink Rule, for Pattern Makers.

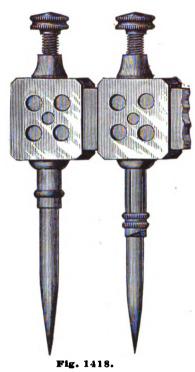
21 inch. each	.	4 00



IMPROVED TRAMMEL POINTS.

PE	R P.	AIR.
No. 1∸Small, Bronze Metal,		
Steel 'Points	\$ 1	50
No. 2-Medium, Bronze Met-		•
al, Steel Points	2	00
No. 3—Large, Bronze Metal,		
Steel Points	2	75

Fig. 1417.



MILLER'S PATENT BRASS EXTENSION TRAMMEL POINTS.

ı—Ре	r dozen		\$12	00
2—	"	•••••	18	00
3—	"		24	00
4	"	• • • • • • • • • • • • • • • • • • • •	28	00
	2— 3—		2— " 3— "	3— " 24

PLUMB BOBS.





Weight, about 8 ounces.

No. I—Small, Bronze Metal, with Steel Point... \$1 75
" 2—Large, " " " " 2.25

Fig. 1420.—ADJUSTABLE.

PATENT ADJUSTABLE TOOL HOLDER.



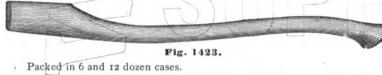
Hollow handle, with twenty cast steel tools, hard maple handle, with lignum-vitæ cap and adjustable steel chuck. Will hold any thing, from cambric needle to 8 inch mill file

Per dozen							. \$12 0	0
Tool	Holders	, with	Solid	Handl	e, with	out To	ols.	
For file	s, awls, chi	sels, etc.		5				
Maple Hand Apple Tree		zen/		//:)[:	\$4 0	0

POLISHED HICKORY RAILROAD PICK HANDLES.

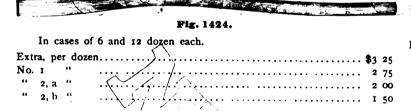
	Fig. 1422.	
		\$3 25
36 " Second q	uality	2 75

POLISHED HICKORY AX HANDLES.



All white, extra, per doz.	\$2,00	2 25	- 2 50	2 50	-2 75 .	3.00	3 25
Size, inch							

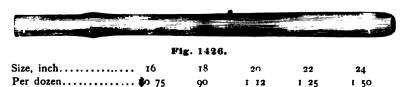
POLISHED HICKORY ADZE HANDLES.



POLISHED HICKORY SLEDGE HANDLES.

77.00							: · · · · · · · · · · · · · · · · ·	
			Fig. 14	25.	1. 1	. !/	1	
Size, inch			30	32	134/	36 /	38 [₄₀
Extra, per dozen.	. \$1 50	I 75	I 75	2 00	2 25	2 25	2 50	Ž 75
No. 1, ".	. I I2	I 38	1 50	1 65	I 75	I 75	2 25	2 50
" , "	1 00	1 12	1 25	T 28	1 50	1 50	T 75	2 00

POLISHED HICKORY BLACKSMITHS' HAMMER HANDLES.



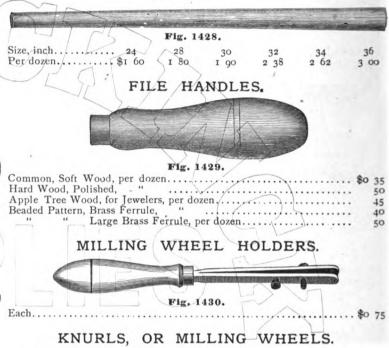
POLISHED HICKORY MACHINISTS' AND ENGINEERS' HAMMER HANDLES.



Pig. 11427.

Size, inch... 13 Per dozen.. \$0 50 16 1 00 1 12 1 25 1 50 70 55

POLISHED HICKORY MAUL AND TURNING HAMMER HANDLES.



minimar.	Ommunap	2002002121212121	California de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la constantia de la consta
Fig. 1431.	Fig. 1432.	Fig. 1438,	_ Fig. 1434.
arious Patterns e	ach		So so and

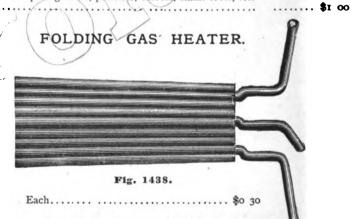
CHASERS.

Fig. 1435. For cutting screws from 10 to 48 threads to the inch, per pair...... \$1 00

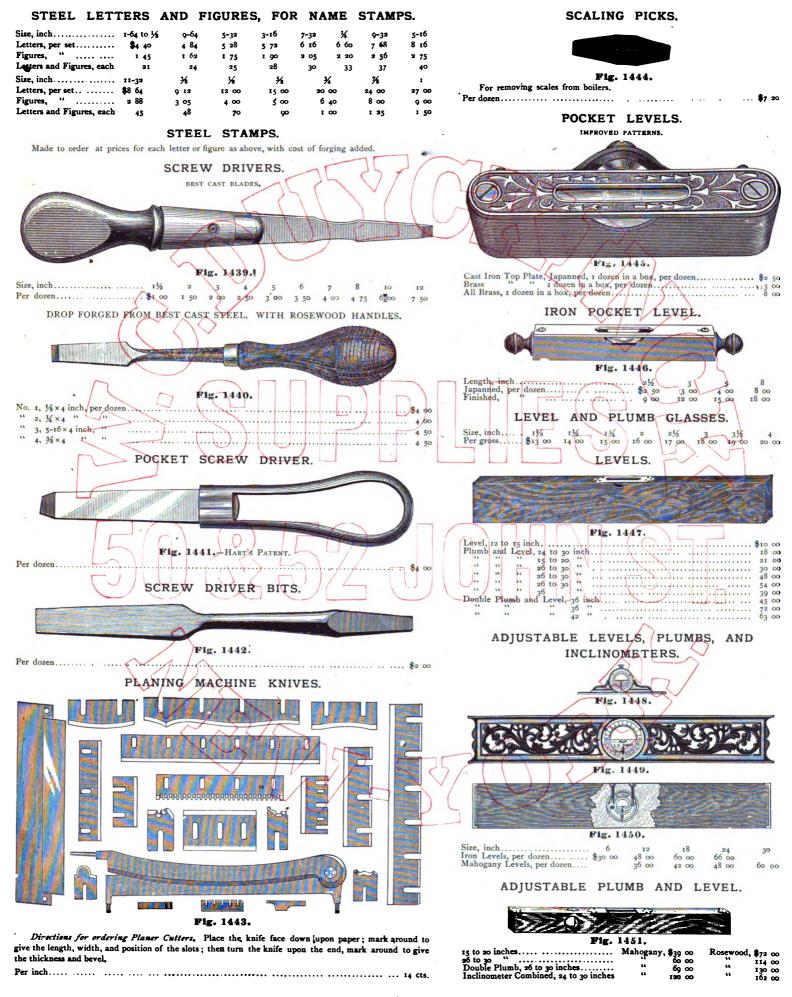
PATENT GAS HEATER.

Fig. 1437.

For tempering drills, punches, chisels, small tools, etc. Each...



Digitized by Google



MEASURING TAPES.

CHESTERMAN'S STEEL AND METALLIC.



Fig. 1452.

No. 34^L—METALLIC OR WIRE WOVEN TAPES.

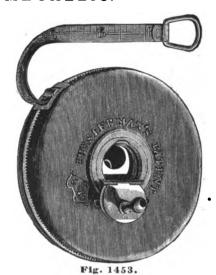
In leather case, divided either in 10ths or 12ths.

Length, feet 24	25	33	40
Each \$3 00	3 15	3 60	3 90
Length, feet 50	66	75	100
Each\$4 50	5 00	5 75	7 00

METALLIC TAPES.

Without case. Tapes same as No. 34L.

Length, feet	25	33	50	66	75	100
Each\$:	I 50	1 90	2 60	3 00	3 50	5 00



No. 38L.-STEEL TAPES.

Leather case, flush handle, divided either in 10ths or 12ths.

Length, feet 24	25	33	40	50	66	- 75	100
Each \$7 60							

No. 37.—STEEL TAPES.

German silver case, wind up flush handle.

Length, feet	10	12	15	20
Each\$	5 10	6 00	7 70	9 50

No. 36SS.—STEEL TAPES.

German silver case, with spring stop, divided in 16ths to the inch, or 16ths on one side and metres on the other.

Length, feet 3	5	6	9	10	12
Per dozen\$25 70	32 50	37 50	40 00	58 50	66 00



Fig. 1454.



Fig. 1455.



Fig. 1456.

PATENT LEATHER CASE, FOLDING HANDLE.

PER DOZEN.

Length, feet 25	30	40	. 50	66	75	80	100
Common ½ inch Cotton Tape \$5 75	6 00	6 75	7 25	7 75	8 25	10 25	11 75
Medium ⅓ inch Holland " 6 ∞	6 50	8 oo	9 00	10 00	11 00	11 50	13 50
Fine Stitched 1/2 inch Super Corded Linen Tape	8 oo	9 25	11 00	13 00	14 00		16 00
" " 9-16" " " " " ·······			14 00	15 00	16 00		18 00
Surveyors' 1/2 inch Super Heavy Holland Tape			15 00	16 oo	17 00		IQ UO

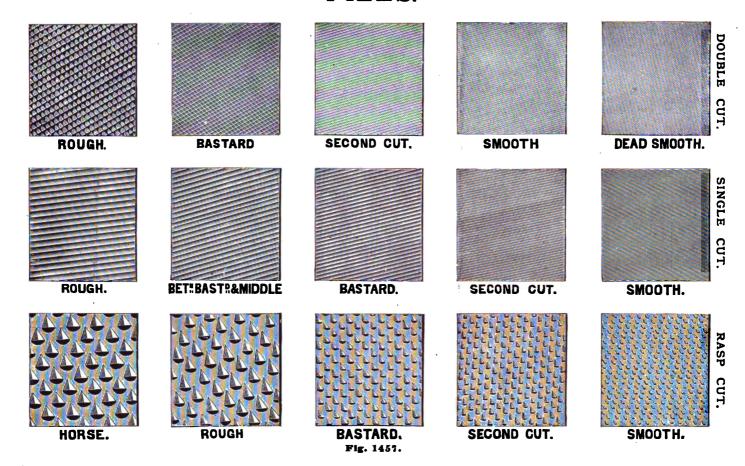
RUSSET LEATHER CASE, FOLDING HANDLE.

Length, feet 50	66	75	100
Surveyors' 36 inch Holland Tape\$17 00	18 00	19 00	20 00
" Extra Fine Stitched 1/8 inch			
Corded Water-proof Linen Tape 19 00	21 00	23 00	25 00

BEND LEATHER CASE.

Length, feetSurveyors' Super Heavy Cord-	25	33	40	50	66	75	100
ed Tape Surveyors' Patent Wire Warp				17 00	18 00	19 00	21 00
Tape	25 00	20 00	31 00	37 00	43 00	40.00	55.00

FILES.



FILES AND RASPS.

\$10 in & Sterling.

	Size, inch	1, 4	4½	5		5 1/2		6	7		8	9		10)	11		12	ī	3	I.	1	15		16	I	7	1
E E	Flat, Square, Round, Half Round, and Mill Saw,																											
40 J	Hand, Warding, and Three Square															0 76	12	50	15	OC I	18 (00,2	I 5	0 25	00	30	00	34 (
Bast d	Knife	4 26	4 7	5 5	26	5 5	0 (00	7 5	0 0	900	10	76 1	2 5	50									-	1	Ī	İ	•
2 A (Cross and Equaling	3 12	2 50	3	74	4 2	6 4	ļ 76	5 5	0 (6 74	8 :	26 1	0	1 00	I 50	13	50	ι6	50	19 !	50/2	30	3 27	50	32	00	37 (
, 1	Flat, Square, Round, Half Round, and Mill Saw,																											
	Hand, Warding, and Three Square															2 00	13	50	16	50 1	19 !	50 2	3 5	0,27	50	32	50	37
(ပေ		4 88	5 38	8 6	00	63	8 6	5 76	8 5	0 10	00 0	12	00 1	3 5	50		1 .	Ì		- 1							-	
' (Cross and Equaling		4 12																									
. (Flat, Square, Round, Half Round, and Mill Saw,	3 38	3 7	5 4	12	4 5	0 4	, 76	5 7	6) (5 76	7	76	9 5	50 I	I 50	13	26	15	00 1	81	00'2	1 0	0 26	00	31	50	37 (
	Hand, Warding, and Three Square		4 1:													3 26	15	00	18	တုံး	21 (00,2	6 o	31	50	37	00	42
်္ပေ)	Knife (Gin Saw)	5 76	6 12	2 6	76	7 2	6 7	76	9 5	0,11	50	13	26 1	5 (00			- 1				i				1	- 1	
, (Cross and Equaling	4 50	4 7	5 5	26	5 7	6 6	12	7 2	6 8	3 50	10	26 1	2 5	50 I	4 00	16	50	19	50 2	24 0	00 2	y o	0 33	50	39	50	44

RASPS.

Size, inch	6	7	1	9	10	11	12	13 14	15	16
Horse Rasps, Half File, and Shoe Rasps				1	1 /			1		1 -
Horse "Beveled" " Tanged Cabinet Files, Flat and Half Round			i		8 50 10 76	10 00 12 50	11 76 15 00	13 50 16 00 18 00 21 50	19 00 25 00	22 50 30 00
Cabinet Files, Flat and Hall Round	4 76	5 76	0 7	6 7 7	9 50	11 50	13 26	15 00 18 00	9	

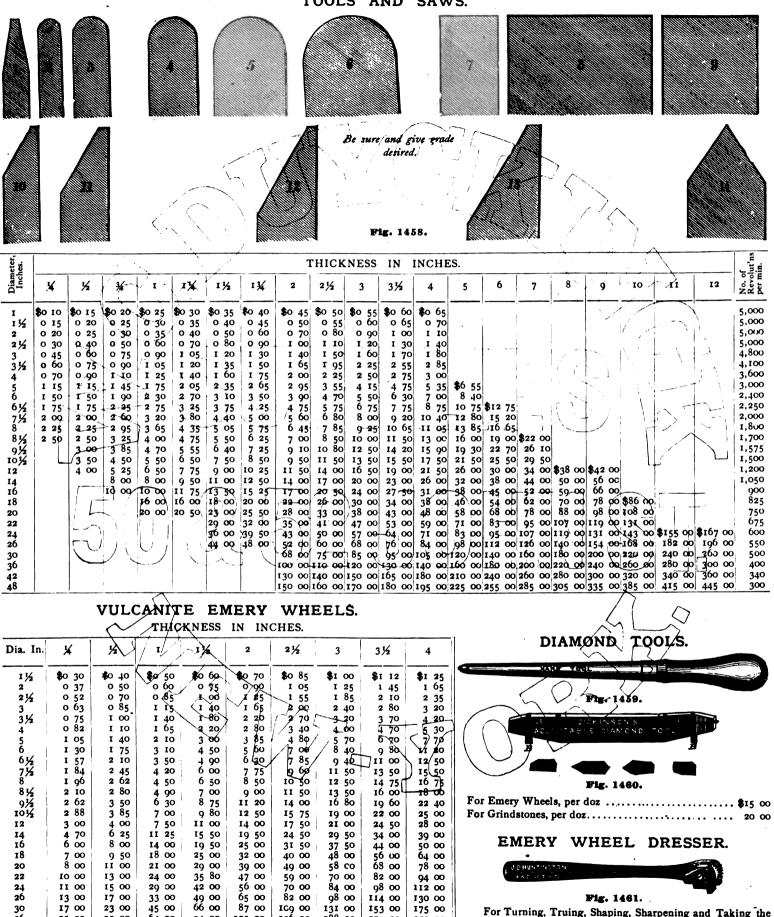
SAW FILES.

Size, inch	1, 31/2	4	41/2	5 5 1/2	6	61/2	7	7½	8	8 1/2	9	10	11	12
Tapers, Second Cut, Single Pit Saw, " Cant (Gin Saw)	\$2 00 2 38 3 76	2 26 2 62 3 76	2 50 2 88 4 I2	2 76 3 26 3 26 3 76 4 38 4 88	3 76 4 26 5 38	4 26 4 76	4 76 5 26	5 2 6 6 00	6 oo 6 76	6 76 7 26	7 76 8 00	9 76 10 00	12 00 12 50	14 50 15 00

STUBS' FILES.

	OINT OR		ES.	HAND,	KNIFE, A	AND PILLA	K FILES.	TAP	ER THRE	E SQUARE	FILES.	SQUA	KL AND	TAPER F	LAI FILL
Size, in.	Bastard.	Smooth.	Super.	Size, in.	Bastard.	Smooth.	Super.	Size, in.	Bastard.	Smooth.	Super.	Size, in.	Bastard.	Smooth.	Super.
to 3	\$2 10	\$2 40	\$2 30	1 to 3½	\$1 95	\$2 25	\$3 30	ı to 3	\$1 65	\$2 10	\$2 40	1 to 3	\$1 95	\$2 10	\$3 00
3/2	3 00	2 95 3 30	3 60 4 20	4 41/2	2 10 2 55	2 70 3 30	3 95 4 50	3½	1 80 2 10	2 40	2 95 3 30	3½	2 10	2 40	3 30
41/2	3 30 3 60	3 75 4 20	4 80 5 40	5 6	2 70 3 90	3 60 4 80	4 80 6 00	4½	2 30	3 00 3 60	3 90 4 50	41/2	2 65 2 70	3 30	4 50 4 80
6	4 80 5 40	5 40 6 60	6 6o 8 40	7 8	4 80 6 00	6 oo 7 20	7 20	6 7	3 30	4 20 5 40	5 20 7 20	6 7	3 90 4 80	6 00	7 20
8	6 00 7 20	7 20	9 60	9	7 20 8 40	8 40	10 80	8	6 oo 7 20	7 20 8 40	8 40 10 80	8 9	5 40 6 60	6 6o 7 85	9 60
10	9 00	c8 or	13 20 18 00	12	10 80	13 20	16 80	10	8 40	9 60	12 00	10	7 85	9 60	10 80
12	-	ND FILES.	10 00		FOUAL	ING FILES	1//	1	CROSS	ING FILES		WAI	RDING F	ILES.	SLITTING
Size, in.	Bastard.	Smooth.	Super.	Size, in.	Bastard.	Smooth.	Super	Size, in.	- / /	Smooth.	Super		Bastard.	Smooth.	FILES. Inch. Basta
r to 3	\$1 8o	\$2 40	\$3 30	r to 31/2	\$2 10	\$2 46	\$3 30	I to 3	1-\$2 70	\$3 00	\$3 60	1 to 31/2	\$1 8o	\$2 10	2 \$2 1
31/2	1 95 2 10	2 70 3 00	3 60	41/2	2 40	2 70	3 90	31/2	300	3 30	4 20	1 14.	2 10 2 25	2 55 3 00	21/2 2 7
41/2	2 40	3 30	4 80	5	3 00	3 30 3 60	4 80	4 1/2	3 30 3 60	4 90	5 40	5 6	2 40	3 30	31/2 3 3
5	3 30	3 60	7 20	7 8	3 00 4 20	4 80 5 40	6 oo 7 20	5 6	3 90 5 40 6 60	4 89	7 20	7/	3 60 4 50	4 50 5 40	4 3 6 4 3 9
7 8	4 20 6 00	6 oo 7 20	9 60	8	5 40 6 60	7 20 8 40	9 00	7 8	7 20	7 85	9 60	11/1			5 4 2 5 4
1 9	7 20 7 85	10 80	13 20	10	8 40 10 80	9 60 13 20	16 80	9	8 40 9 60	IO 20 I2 00	13 20	1//			
Bastard . Second Comooth	Cut	\$0 94 I		1 87 2 50 Vance one	2 25 2 2 62 3 inch.	8 9 2 25 2 50 2 64 3 003 37	2 62 3 00 3 75	3 00 3 37 4 50	3 75	3 75 4 56 4 50 3 25 6 90 7 15	8 25	7 12 9 55	7 12 8 29 10 50	,	9 55 10 10 50 .12 13 50 15
		ه و کسید	FILE T				A	A	All sizes.		GRIN	DSTON	ES.		
For clear	ing hies, ir	Tlengths of 6	inches, per	dozen	••••••	••••••	369 00	Berea	, per pound	I			كسأ		
		F	OTTEN					OL:-				••••••	• • • • • • • • • • •		• • • • • • •
Soft Engl	lish, per po u	mdbm		STON			cts	Ohio, New	. "	pound		• • • • • • • • • • •			
Selected,	per pound		PUMICE cts.	STON Powdered	E, per pound.		<u>cts.</u>	New Wash 60, 76	Castle, per p Ve keep in to be soon Mingron Mingron to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to be soon to	stock a full as	Elisortment of cron Mitts lour, and Cro	MERV. the follow; Nos. of occus.	wing branc 8, 10, 12,	ds and num 14, 16, 20, 2	bers : Chest 4, 30, 36, 46,
Selected,	per pound	F	PUMICE cts.	STON Powdered	E, per pound.	(f)	cts.	WASH 60, 76 Put u	Castle, per per per per per per per per per per	stock a full as	Elsortment of Fron Mills our, and Cr	MERY. the follow, Nos. 6,	wing branc 8, to, 12,	chester Washington	bers : Снвзт 4, 30, 36, 46,
Selected,	per pound	per pound.	PUMICE cts.	STON Powdered	E, per pound.	(f)	<u>cts.</u>	WASH 60, 70 Put u	Castle, per per la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de la company de	stock a full as ILLS, WELLING O, 120, 150, F about 200 lbs.	Elsortment of tron Mills our, and Cru-Flour, regi-	MERV. the follow; Nos. o.	wing branc 8, to, 12,	chester Washington	bers : Chest 4, 30, 36, 46,
Selected, For patte	per pound	per pound.	PUMICE cts.	STON Powdered	E, per pound.	(f)	<u>cts.</u>	WASH 60, 76 Put u	Castle, per per per per per per per per per per	stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as	Elsortment of Fron Mills our, and Cr	MERV. the follow; Nos. o. o. o. o. o. o. o. o. o. o. o. o. o.	wing branc 8, to, 12,	chester Washington	bers : Chest 4, 30, 36, 46,
Selected, For patte	per pound	per pound.	CROUNI	STON Powdered HELLA	E, L, per pound.	(f)	cts.	WASH 60, 76 Put u	Castle, per per per per per per per per per per	stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as	Elour, and Cro-Flour, regular Chester - Washingto-Wellington	MERV. the follor; Nos. of occus.	wing branc 8, 30, 12,	chester Washington	bers : Chest 4, 30, 36, 46,
Selected, For patte	per pound	per pound.	PUMICE cts.	STON Powdered HELLA	E, L, per pound.	(f)	cts.	WASH 60, 76 Put u	Castle, per per per per per per per per per per	stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as	Elour, and Cro Flour, regular Chester Washingto	MERV. the follor; Nos. of occus.	wing branc 8, 30, 12,	chester Washington	bers : Chest 4, 30, 36, 46,
Selected, For patte	per pound	per pound	CROUNI	STON Powdered HELLA	E. per pound. C. SS.	(f)	cts. cts.	New Wash Go, 76	Castle, per j	stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as stock a full as	Elsortment of Flow, MILLS lour, and Cro Flow, regree — Chester — Washington — Wellington	MHRY. the follow; Nos. of the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the	wing branc 8, to, 12, 28, per lb.,	is and num 14, 16, 20, 2. Chestar Washington	bers : Chest 4, 30, 36, 46,
Selected, For patte	per pound,	per pound	GROUNI	STON Powdered HELLA GLAS D GLAS	E, per pound. C. SS.	(n) (<u>4</u>	cts. cts.	New Wash Go, 76	Castle, per j	stock a full as ILLES, WELLINO O, 120, 150, F about 200 lbs. 200 " 10 " 10 " 10 " 10 " 2, per res	Elssortment of From Mills four, and Cru Flour, regree — — — — — — — — — — — — — — — — — —	MHRY. the follow; Nos. of the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the	wing brance 8, no. 12,	ds and num 14, 16, 20, 2. Chester Washington.	bers : Chest 4, 30, 36, 46,
Selected, For patte For grine	per pound,	per pound.	CROUNICE RY RE	STON Powdered HELLA D GLAS D LEA	E. L. per pound. C. SS.	(n) (<u>4</u>	cts. cts.	New Wash Go, 76	Castle, per j	stock a full as ILLS, WELLIN O, 120, 150, F about 200 lbs. 200 " 10 " 10 " 10 " 10 "	Elssortment of From Mills four, and Cru Flour, regree — — — — — — — — — — — — — — — — — —	MHRY. the follow; Nos. of the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the	wing brance 8, 30, 12,	ds and num 14, 16, 20, 2. Cliester Washington Wellington	bers : Christia, 30, 36, 46,
Selected, For patte For grine	per pound,	per pound	CROUNICE RY RE	STON Powdered HELLA D GLAS D LEA	E. L. per pound. C. SS.	(n) (<u>4</u>	cts. cts. cts.	New Wash Go, 76	Castle, per j	stock a full as ILLES, WELLINO O, 120, 150, F about 200 lbs. 200 " 10 " 10 " 10 " 10 " 2, per res	Elssortment of From Mills four, and Cru Flour, regree — — — — — — — — — — — — — — — — — —	MHRY. the follow; Nos. of the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the	wing brance 8, 30, 12,	ds and num 14, 16, 20, 2. Cliester Washington Wellington	bers : Christia, 30, 36, 46,
Selected, For patte For grine	per pound,	per pound.	CROUNICE RY RE	STON Powdered HELLA D GLAS D LEA	E. L. per pound. C. SS.	(n)) <u>(</u> 2	cts. cts. cts.	New Wash Go, 76	Castle, per j	stock a full as ILLS, WELLIN O, 120, 150, F about 200 lbs. 200 " 10 " 10 " 10 " 10 "	E) ssortment of stron Mills our, and Cr Flour, regr Chester Washington EMER and assorted,	MERV. the follow; Nos. 6, nocus ular nowher " Y RAI per ream.	wing brance 8, no. 12,	ds and num 14, 16, 20, 2. Cliester Washington Wellington	bers: Chest 4, 30, 36, 46,
Selected, For patte For grine Per pour	per pound, ern makers, ding valves, ad	per pound.	CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI	STON Powdered, HELLA D GLAS D LEA IBAGO. XX., pac 16	E. L. per pound. C. SS.	(n)) <u>(</u> 2	cts cts cts.	New Wash Go, 76	Castle, per j	stock a full as ILLS, WELLIN O, 120, 150, F about 200 lbs. 200 " 10 " 10 " 10 " 10 "	E) ssortment of stron Mills our, and Cr Flour, regr Chester Washington EMER and assorted,	MHRY. the follow; Nos. of the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the	wing brance 8, no. 12,	ds and num 14, 16, 20, 2. Cliester Washington Wellington	bers : Chest 4, 30, 36, 46,
Selected, For patte For grine Per pour	per pound, ern makers, ding valves, ad	per pound.	CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI	STON Powdered, HELLA D GLAS D LEA IBAGO. XX., pac 16	E. L. per pound. C. SS.	(n)) <u>(</u> 2	cts. cts. cts.	New Wash Go. 76 Put 11	Castle, per j Ve keep in : HINGTON Mi D. So, yo, to p in kegs of package y Paper, N	stock a full astick walling, 120, 150, F about 200 lbs. 200 " 200 " 10 " 10 " 10 "	Elssortment of prox Mills lour, and Cro Floar, regree — — — — — — — — — — — — — — — — — —	the follow; Nos. of the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the followin	wing brane 8, to, 12, 22, per lb., ""	ds and num 14, 16, 20, 2. Cliester Washington Wellington	bers: Chest 4, 30, 36, 46,
Selected, For patte For grine Per pour	per pound, ern makers, ding valves, n 5 and 10	per pound. per pound. pound package barrels or bo	CROUNI CROUNI PLUM BOI CXES, per pour	STON Powdered, HELLA D GLAS D LEA IBAGO. XX, per 16	E, per pound. C. SS.	25 1	cts cts cts.	New Wash Go, 7c Pht u	Castle, per j Ve keep in : HINGTON Mi D. So, yo, to p in kegs of package y Paper, N	stock a full as ILLS, WELLING O, 120, 150, F about 200 lbs. 200 " 200 " 10 " 10 " 10 " 10 " 10 " 10 " 10 "	Elssortment of prox Mills lour, and Cro Floar, regree — — — — — — — — — — — — — — — — — —	MHRY. the follow ; Nos. cous. y RAI per ream.	wing brance 8, no. 12,	ds and num 14, 16, 20, 2. Cliester Washington Wellington	bers: Chest 4, 30, 36, 46,
For patte For grine Per pour	per pound, ern makers, ding valves, n 5 and 10	per pound. per pound. pound package barrels or box	CROUNI CROUNI CRY RE PLUM BOI Cxes, per pour	Powdered Powdered BLAS BLAS BAGO. RAX. IDAX TONES	E, per pound. C. SS. AD.	SLIPS.	cts cts cts cts.	New Wash Go, 7c Pht u	Castle, per j Ve keep in HINGTON M D. 80, 90, to p in kegs of package ry Paper, N	stock a full as ILLS, WELLING O, 120, 150, F about 200 lbs. 200 " 200 " 10 " 10 " 10 " 10 " 10 " 10 " 10 "	Elssortment of prox Mills four, and Cru Flour, regree — " — Chester — Washington — Wellington — Wellington — Wellington — EMER	MHRY. the follow ; Nos. cous. y RAI per ream.	PER.	ds and num 14, 16, 20, 2. Cliester Washington Wellington	bers: Chest 4, 30, 36, 46,
For patte For grine Per pour By the c WASHI ARKAN	per pound ern makers, ding valves, n 5 and 10 quantity, in ARI TA, mount ISAS, "	per pound. per pound package barrels or bo KANSAS ed in Wooder STONES, va	CROUNI CROUNI CROUNI PLUM BOI Oxes, per pou OIL S	Powdered, Powdered, D GLAS D LEA LIBAGO. XX, per 16 TONES	AND And is inch, is inch, is ibs., per p	25 SLIPS.	cts cts cts cts cts cts sq. do cts cts cts.	New Wash Go. 76 Put. 11	Castle, per j Ve keep in: HINGTON Mi D. 80, 90, 10 p in kegs of p ackage ry Paper, N	stock a full as ILLS, WELLING, 120, 150, F about 200 lbs. 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 200 " 20	EMER EMER Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow	the following in the following with the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the	PER.	is and num 14, 16, 20, 2. Chestar Washington Wellington	bers : Chess 4, 30, 36, 46,
For patte For grine Per pour Put up i By the c WASHI ARKAN WASHI SQUAR	per pound, ern makers, ding valves, ding valves, ad ARI TA, mount ISAS, " ISAS OIL TA " E ARKAN	per pound per pound packa barrels or bo KANSAS ed in Wooder STONES, va usas	CROUNI CRY RE PLUM BOI OXES, per pour Case	Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powder	AND. AND. 6 inch. 6 r pound.	SLIPS. \$1 50 8 i 2 50 8 oound.	cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts	Wash 60, 76 Put u	Castle, per j Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve keep in: Ve k	stock a full as stock a full as stock a full as stock a full as stock as full as stock as full as stock as full as stock as full as stock as full as stock as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as	EMER EMER Company of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the stat	the following in the following with the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the following in the	PER.	is and num 14, 16, 20, 2. Chestar Washington Wellington	bers : Chest 4, 30, 36, 46,
For patter For grine Per pour Put up i By the c WASHI ARKAN ARKAN WASHI SQUAR KNIFE	per pound, ern makers, ding valves, ding valves, ad ARI TA, mount ISAS, " ISAS OIL TA " E ARKAN EDGE SI	per pound per pound packa, barrels or bo KANSAS ed in Wooder STONES, va is ASS SLIPS, LIPS, each	CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI	Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powder	AND And inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches inches	SLIPS. \$1 50 8 i 2 50 8 ound.	cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts	New Wash Go, 7c Put u All/n Africi Engli	Castle, per j Ve keep in strong of to posses, so, to p in kegs of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of the package of	stock a full asstuck a full asstuck a full asstuck a full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full asstuck as full as full asstuck as full as full asstuck as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as f	Elssortment of From Mills sour, and Cro Flour, regree — — — — — — — — — — — — — — — — — —	the follow: Nos. of the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the following the follow	PER.	Chestar Washington I 1½ 80 70	bers : Christ 4, 30, 36, 46,
For patter For grind Per pour Put up i By the o WASHI ARKAN ARKAN WASHI SQUAR TRIAN	per pound ern makers, ding valves, n 5 and 10 quantity, in ARI TA, mount ISAS, " ISAS OIL TA " E ARKAN EDGE SI GULAR	per pound. per pound package pound package pound package can wooder stones, va ab usas SLIPS, cach"	PUMICE cts. GUM SI GROUNI PLUM BOI oxes, per pou OIL S' n Case	Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powder	E, per pound. C. SS. AD. AND 6 inch, 6 " 2 lbs., per p	25 2 SLIPS. \$1 50 8 i 2 50 8 ound.	cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts	New Wash Go, 7c Put u All, n Ance: Engli	Castle, per p Ve keep in HINGTON M D. 80, 90, to p in kegs of package package ry Paper, N co to 1½ a 2, 2½, and Extra, in 50 to 1½, per	stock a full as ILES, WELLING O, 120, 150, F about 200 lbs. 200 " 10 " 10 " 10 " 10 " 11 3, per ream. yard rolls, wid r yard	Elssortment of From Mills four, and Cro-Floar, regree Washington Wellington EMER and assorted, for Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Floar Flo	MHRY. the follow: Nos. y RAI per ream. Y CLO T PAP	PER.	Chester Washington Wellington	bers : Chest 4, 30, 36, 46,
For patter For grine Per pour Put up i By the c WASHI ARKAN ARKAN WASHI SQUAR KNIFE KNIFE ENCIR	per pound ern makers, ding valves, d ARI TA, mount ISAS, "ISAS OIL TA " E ARKAN EDGE SI GULAR L POINTS	per pound per pound package barrels or book KANSAS ed in Wooder STONES, va ab ISAS SLIPS, LIPS, each """" each	PUMICE cts. GUM SI GROUNI PLUM BOI oxes, per pou OIL S' n Case	Powdered HELLA D GLAS IBAGO. XX, par 16 RAX. ITONES	AND AND 6 inch 6 "r pound	SLIPS. \$1 50 8 i 2 50 8 ound.	cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts	New Wash Go, 76 Put u All/ne Angle Engli	Castle, per j Ve keep in: No. 80, 90, 10 p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p i	stock a full as stock a full as stock a full as stock a full as stock as full as stock as full as stock as full as stock as full as stock as full as stock as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as	EMER EMER Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow	the follow; Nos. of the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the followin	PER.	is and num 14, 16, 20, 2. Chestar Washington Wellington	bers: Chest 4, 30, 36, 46,
For patte For grine Per pour By the c WASHI ARKAN ARKAN WASHI SQUAR KNIFE KNIFE ENCIR	per pound, ern makers, ding valves, ding valves, ad ARI TA, mount ISAS, " ISAS OIL TA " E ARKAN EDGE SI GULAR L POINTS D EDGE S	per pound per pound package barrels or book KANSAS ed in Wooder STONES, va ab ISAS SLIPS, LIPS, each """" each	CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI CROUNI	Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powdered, Powder	AND AND 6 inch 7 inch 7 pr pound	SLIPS. \$1 50 8 i 2 50 8 oound.	cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts	New Wash Go, 76 Put u All/ne Angle Engli	Castle, per j Ve keep in: No. 80, 90, 10 p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p i	stock a full as stock a full as stock a full as stock a full as stock as full as stock as full as stock as full as stock as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as fu	EMER EMER Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow	the follow; Nos. of the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the followin	PER.	is and num 14, 16, 20, 2. Chestar Washington Wellington	bers: Chest 4, 30, 36, 46,
For patter For grine Per pour Put up i By the c WASHI ARKAN ARKAN WASHI SQUAR KNIFE TRIAN PENCII ROUNI	per pound ern makers, ding valves, ding valves, ad ARI TA, mount ISAS, "ISAS OIL TA " E ARKAN EDGE SI GULAR L POINTS D EDGE S SCO polishing, ir	per pound per pound pound package barrels or book KANSAS ed in Wooder "STONES, va ab ISAS SLIPS, LIPS, each """ """ """ """ """ """ """	PUMICE cts. GUM SI GROUNI BOI OXES, per pour OIL S' na Case	D GLAS BAGO. XX, par 16 RAX. TONES from ½ to dis each, per 16 Water hes long.	AND AND 6 inch 6 mp r pound 7 of Ayr	SLIPS. \$1 50 8 i 2 50 8 ound. Stone.	cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts	New Wash Go, 76 Put u All/ne Angle Engli	Castle, per j Ve keep in: No. 80, 90, 10 p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p in kegs of p i	stock a full as stock a full as stock a full as stock a full as stock as full as stock as full as stock as full as stock as full as stock as full as stock as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as	EMER EMER Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow Flow	the follow; Nos. of the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the following with the followin	DTH. So % CER.	is and num 14, 16, 20, 2. Chestar Washington Wellington	bers : Chest 4, 30, 36, 46,
For patter For grine Per pour Put up i By the c WASHI ARKAN ARKAN WASHI SQUAR KNIFE TRIAN PENCII ROUNI	per pound, ern makers, ding valves, ding valves, ding valves, ad ARI TA, mount ISAS, " ISAS OIL TA " E ARKAN EDGE SI GULAR L POINTS D EDGE S SCO polishing, ir th square	per pound per pound package pound package pound package EANSAS ed in Wooder STONES, va LIPS, each cach CTCH He	PUMICE cts. GROUNI GROUNI BOI OXES, per pour Case	D LEASIBAGO. XX, per 16 RAX. Ind TONES from ½ to to to to each, per 16 Water these long.	AND AND 6 inch 7 inch 7 pr pound	SLIPS. \$1 50 8 i 2 50 8 oound.	cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts cts	New Wash Go, 7c Put u Emer All n Amer Engli	Castle, per j Ve keep in : IINGTON Mi D. 80, 90, 10 p in kegs of p in kegs of p in kegs of castle, per j oo to 1½ a 2, 2½, and Extra, in 50 to 1½, per 2, per yard 2½ 3	stock a full as stock a full as stock a full as stock a full as stock as full as stock as full as stock as full as stock as full as stock as full as stock as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as full as	Elssortment of From Mills lour, and Cro Floar, regree — — — — — — — — — — — — — — — — — —	MHRY. the follow; Nos. of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following of the following	DTH. See See See See See See See See See Se	is and num 14, 16, 20, 2. Chestar Washington Wellington	bers : Chest 4, 30, 36, 46,

SHAPES OF EMERY WHEELS FOR GRINDING MOLDING CUTTERS. BITS. KNIVES. TOOLS AND SAWS.



Any particular make of wheel furnished.

125 00

76 00

82 00

109 00 156 00

84 00

98 00

131 00 188 00

42 00

49 00 66 00

94 00

11 00

13 00

17 00

25 00

26

30 36

15 00

17 00

23 00

33 00

29 00

33 00

45 00 64 00



Fig. 1461.

Glazing off Emery Wheels and Saw Gummers.

For Turning, Truing, Shaping, Sharpening and Taking the

Each...... \$6 00

98 00

114 00

153 00

219 00

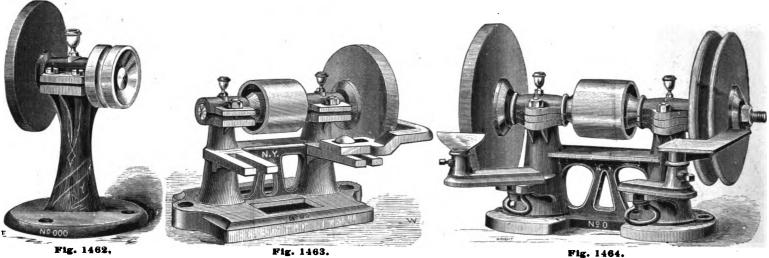
112 00

130 00

175 00

250 OO

EMERY GRINDERS.



EMERY GRINDERS.

No.						, Ea	ch.
000 G	rinde	r, has no Co	unte	rshaft		\$ 5	00
00	**	"	44	**		11	50
0	"	without	"	**		18	50
0	"	with	**	**		29	00
0		"	"	44	and stand,	54	00
1	"	without	"	"		28	00
1	u	with	"	**		ΔĪ	50

Fig.	1463.
No.	

I	Grinder	, with Co	untersl	aft	and stand,	66	50		CO	UNT	ERSHAFTS	ALONE.	
					• • • • • • • • •			No.					Each.
2	**	with	"	"	• • • • • • • • •	60	00	oo (Counte	rshaft	, 	\$	10 50
2	44	"	**	"	and base,	80	00	0	44	**			10 50
		without			• • • • • • •								-
3	- "	with	**	"		115	00	_					
4	44	without	**	"		150	00	2	"	••	•••••	• • • • • • • • • •	16 50
					•••••			3	**	"			18 50
	The ab	ove prices	do no	t in	clude whee	ls.		4	••	66			25 00

Each.

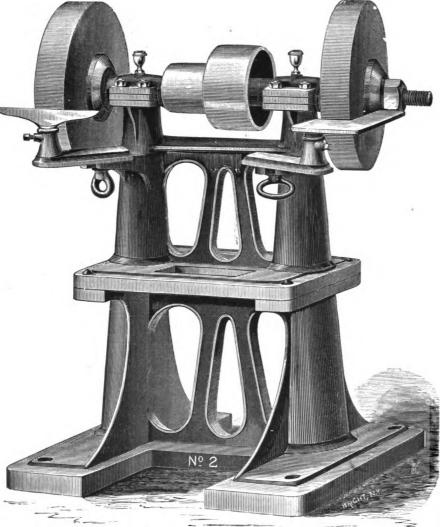


Fig. 1465.

No. 000 Emery Grinder has Steel Arbor for wheels with hole. This machine runs one wheel up to 6 inches diameter, 1 inch face, has no Rests. Is a very desirable machine for Jewelers, Dentists, Engravers, Model Makers, etc., etc. One of these machines should set near every drill lathe, for grinding Twist Drills, Reamers, Taps, Dies, etc., etc. It can be run by either round or flat belts. The only machine of its kind in the market.

No. oo Emery Grinder has 11/4 inch Steel Arbor for wheels with 3/4 inch mandrel hole. This machine runs only one wheel, has one adjustable Rest, can be belted from above or below, and is every way first-class. It runs wheels 12 inch diameter up to 2 inch face. It is suitable for light work, such as Saw Gumming, Lathe Tools, Fluted Reamers, Taps, Drills, etc., etc.

No. o Emery Grinder has 11/2 inch Steel Arbor for wheels with 3/4 inch mandrel hole. This machine can be belted from above or below. Has complete set of Rests and will run two wheels 12 inch diameter, up to 2 inch face. A low price machine for small work in general, such as grinding Lathe Tools, Twist Drills, Reamers, Taps, etc., etc. Will run on a bench or will fit on stand.

No. 1 Emery Grinder has a Steel Arbor 1 3-16 inches diameter for wheels with 1 inch hole. Cone pulley, for two speeds, a set of adjustable rests, and can be belted up or down. This is a well built machine, made expressly for small machine shops. We recommend our customers to order one coarse and one fine wheel, representing different grades of files. This is also a valuable, machine for trimming small Castings of iron or brass, grinding Twist Drills, Hardened Tools, Dies, etc., etc. Runs wheels 10, 12, and 14 inches diameter, up to 2 and 21/2

No. 2 Emery Grinder has 1 5-16 inch Steel Arbor for wheels with 11/4 inch mandrel hole. This machine can be belted from above or below, and will run two wheels 20 inches diameter, from 1 to 21/2 inch face. Has Cone Pulley, complete set of Rests, arms front and rear, and is every way complete. It is constructed to set on a bench or on its pedestal, as shown in cut.

No. 3 Emery Grinder has 11/8 inch Steel Arbor for wheels with 11/2 inch mandrel hole. This machine can be belted from above or below. Has Cone Pulley, and will run two 30 inch wheels, from one to 4 inch face. It is a very heavy machine, suitable for heavy work. Every foundry and large machine shop should have one.

No. 4 Emery Grinder has Steel Arbor 21/4 inches diameter, for wheels with 21/2 inch hole. Will run wheels 24, 36, 40, 44, and 48 inches diameter up to 3, 4, and 5 inches thick. Is suitable for work of the heaviest description-such as for squaring up iron columns, lintels, cornices, sills and work for iron fronts of buildings-also for heavy iron bridge work, railroad shops, rolling mills, etc., etc. The wheels on this machine are so far apart as not to interfere with grinding large pieces on both wheels at once. For heavy work we consider large wheels the most economical, as they present a larger extent of grinding surfaces, both on the sides and faces of the wheels.

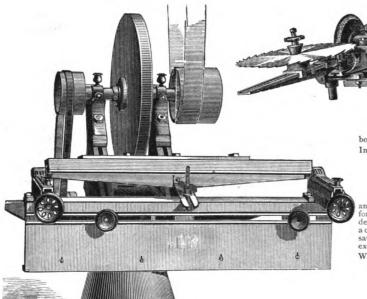


Fig. 1467.

PATENTED AND IMPROVED AUTOMATIC KNIFE GRINDER, FOR ALL KINDS OF LONG KNIVES.

With patent sliding boxes, so that the wheel can be entirely used up. The grinding wheel in each is 26 inches in diameter. Speed for Emery Wheel, 230 revolutions per minute. The price includes the wheel. 50 " " 150 00 Boxing working parts......from \$2 00 to 5 00

COTTON ENDLESS POLISHING STRAPPING BELTS.

These belts are endless, with selvedge edges, are smooth, very flexible, and designed to take the place of ticking belts. They are in widths of 36, 1/2, 1/8, 1/4, 1/4, 11/4, and 2 inches. In 12 foot lengths, of all the different widths.

CANVAS ENDLESS POLISHING BELTS.

They are made in widths of 2 inches up to 36-in any lengths.

TRAUT'S ENDLESS RUBBER POLISHING BELTS.

Per foot in length, for each inch in width, 2 ply..... " " 3 ".....

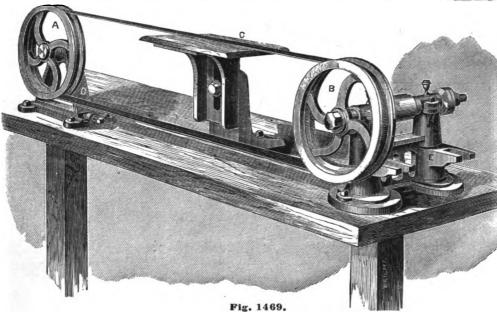


Fig. 1466.

NINE WHEEL GRINDER.

This shows a Grinder for mounting a number of wheels upon the same arbor. It is intended to be bolted to a bench. Is $5\frac{1}{2}$ feet long, takes wheels $8\frac{1}{2}$ inches diameter.

Without attachment for straight saws......\$75 00

With attachment for straight saws, extra....\$25 00

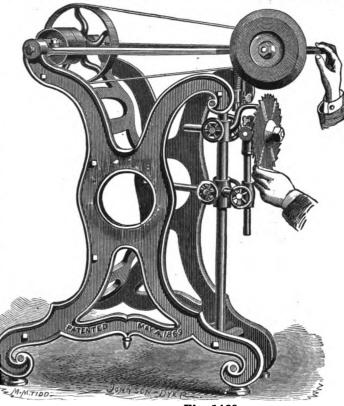


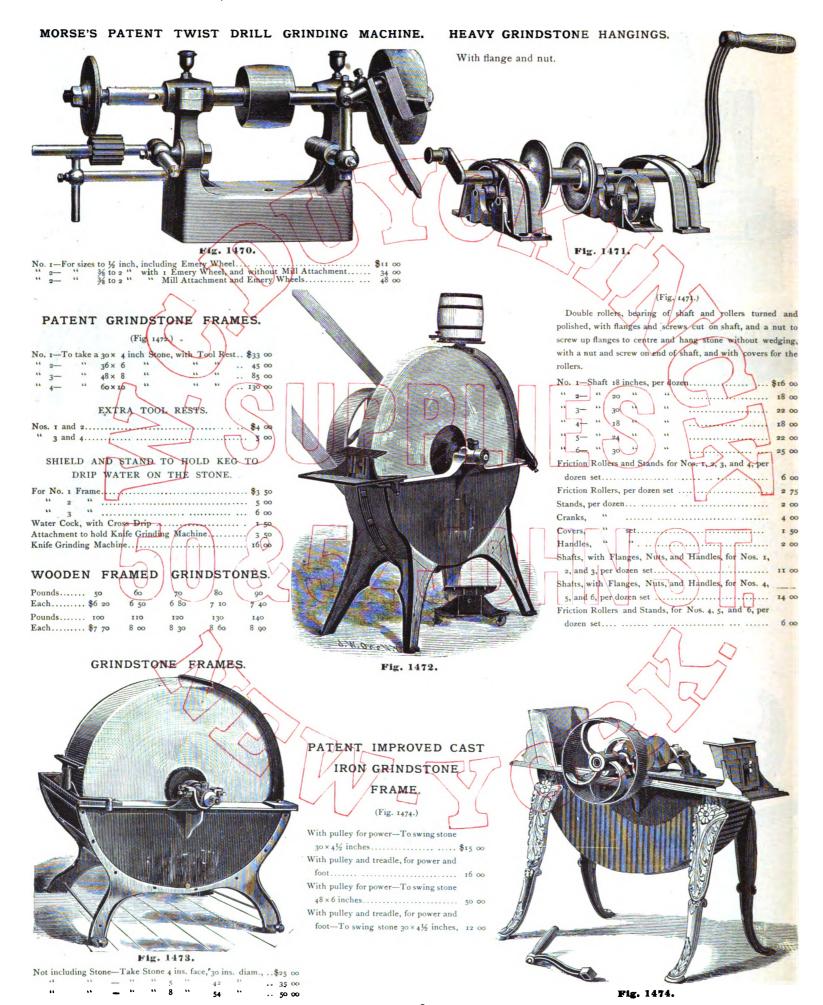
Fig. 1468.

STRAPPING AND BELTING MACHINE. (Fig. 1469.)

The engraving shows at a glance how Traut's Endless Polishing Belt can be used when a flat surface is desired—as the small table between the pulleys keeps the belt in a level position while running, and prevents it from sagging. The centre table should be made long or wide, to suit the kind of work being finished. When polishing round surfaces, such as brass faucets, shovel handles, wagon spokes, etc., the centre table can be removed.

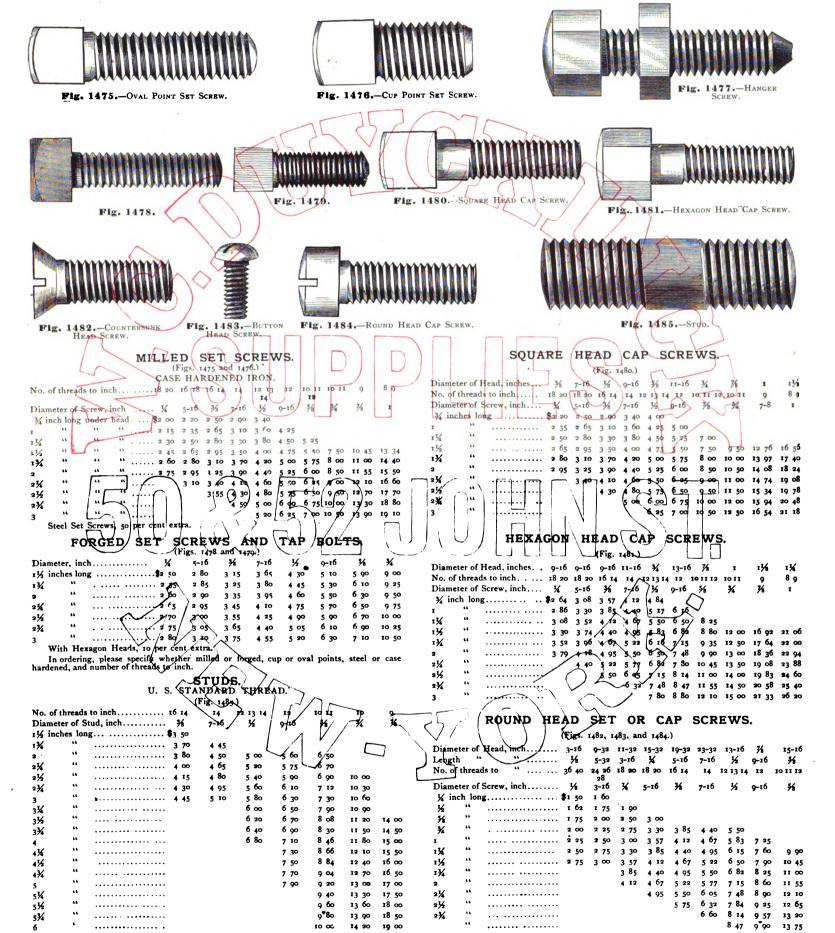
Beltin	ng At	tachm	ent (consisti	ing of	1 2 F	lang	ed Pulleys and		
A	djust	able S	tanda	rd only) for l	belts	2 inc	hes wide	\$ 15	00
The	same,	with p	oulleys	for be	lts 3 i	nches	wid	e	18	∞
	**	**	**	**	4	**	**		20	∞
4				**						
Т	hese	pulley	s fit o	n eithe	ra No	o. o o	r No	. 1 Grinder.		

Double Belting Machine of 4 Pulleys, suitable for hardware manufacturers, etc., built in a substantial manner, on a Single Belting Machine of a Pulleys, on hard wood frame, Belts extra.... 85 00



SET SCREWS.

PER 100.



BOLTS.

TABLE SHOWING OUR STANDARD NUMBER OF V THREADS TO AN INCH.

Diameter, inch 💥	5-16	3/8	7-16	1/2	9-16	*	¥	7∕8	I	1 1/8	r 1/4	13/8	1 1/2	1 5 / 8	134	1 3/8	2
No. of Threads 20																	

MACHINE BOLTS.

With square heads and nuts, finished points.



Ple. 1488.	Rig.	1487.
		•

Lgsh., in. | 1/4 5-16 3/8 7-16 1/2 9-16 **1**/8 11/2.... \$2 70 4 05 4 80 5 65 6 55 10 00 14 15 10 40 3 05 3 50 3 20 3 70 4 30 5 10 15 85 21 60 6 35 II 20 21/2.... 2 90 3 35 3 90 7 45 4 55 5 40 4 10 4 80 3 50 5 70 6 70 7 90 31/2.... 3 10 3 65 4 30 5 05 6 00 7 05 8 35 12 40 17 55 23 80 4..... 3 20 3 80 4 50 5 30 6 30 8 8o 13 00 18 40 24 90 4½.... 3 30 3 95 4 70 5 55 6 60 7 75 9 25 13 60 19 25 26 00 5..... 3 40 4 10 4 90 5 80 6 90 8 10 9 70 14 20 20 10 27 10 5½.... 3 50 4 25 5 10 6 05 7 20 8 45 10 15 14 80 20 95 28 20 6..... 3 60 4 40 5 30 6 30 7 50 8 80 10 60 15 40 21 80 29 30 61/2.... 3 70 4 55 5 50 6 55 7 80 9 15 11 05 16 00 22 65 30 40 7..... 3 80 4 70 5 70 6 80 8 10 9 50 11 50 16 60 23 50 31 50 7½.... 3 90 4 85 5 90 7 05 8 40 9 85 11 95 17 20 24 35 32 60 8..... 4 00 5 00 6 10 7 30 8 70 10 20 12 40 17 80 25 20 33 70 PER POUND.

	₹8	7-16	- 1/2	9-16	¾	*	7∕8	I
3¼ to 10 inch	\$ 0 18	16	14	13	12	II	10¾	101/2
10¼ to 12 "	17	15	131/2	121/2	111/2	10¾	101/2	101/4
Over 12 "	16	14	13	12	11	101/2	101/4	10
Bolts with Hexagon I	leads or	Hexa	igon Ni	ıts		. 10 pe	er cent	extra
If both "	" and	d "	•	٠		.20	"	**

Bolts of irregular shape or style, made to order, will be charged extra at our discretion.

BOLT ENDS.

With square nuts.



Fig. 1488.

Size of Iron, in. ½ 1/8 1/4 1/8 11/4 11/8 11/4 11/8 Length, inch.. 8 9 10 11 12 13 14 15 16 17 18 19 20 Per lb......\$0 14 12 11 101/2 11

ELEVATOR BOLTS.

For bolting buckets to grain elevators.



Fig. 1489.

3-16 inch Malleable Iron.	3-16 and 1/2 inch Wrought Iron.	5-16 inch Wrought Iron.
¾ inch\$1 50		I inch\$3 00
ı " ı 50	I " 2 20	11/4 " 3 00

RAILROAD TRACK BOLTS.'





Fig. 1490.





Fig. 1491.

Fig. 1492.

Fig. 1493.

Prices named for these on application, stating sizes and approximate quantity wanted.

PLOW BOLTS.

With forged Nuts.

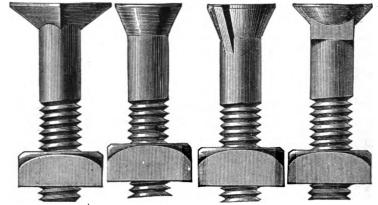


Fig. 1494.—Square Countersunk Head.

In ordering Plow Bolts, please state what style heads are desired, and whether right or left hand threads.

			PI	sk 100.			
Le	ngth.	5-16	3/8	7-16	1/2	9-16	} ⁄8
11/4	inch	\$ 1 70	2 00	2 60	3 50	4 50	5 70
1 1/2	"	1 8o	2 10	2 75	3 70	4 75	6 00
134	· "	1 90	2 20	2 90	3 90	5 00	6 30
2	"	2 00	2 30	3 05	4 10	5 25	6 60
2 ¼	"	2 10	2 40	3 20	4 30	5 50	6 90
2 1/2	"	2 20	2 50	3 35	4 50	5 75	7 20
2 1/4	"	2 30	2 60	3 50	4 70	6 00	7 50
3	"	2 40	2 70	3 65	4 90	6 25	7 8o
314	"	2 50	2 80	3 80	5 10	6 50	8 10
31/2	"	2 60	2 90	3 95	5 30	6 75	8 40
3¾	"	2 70	3 00	4 10	5 50	7 00	8 70
4	"	2 80	3 10	4 25	5 70	7 25	9∞

IN BULK, PER POUND.

5-16	inch \$	0 25	½ inch\$0	13
3/8	"	15	9-16 "	13
	14			

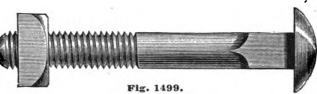


HANGER BOLTS.

3%	inch	diameter,	5 to	7	inches	lon	g	,
*	"	"	6 to	8	**	"	•••••••••••••••••••••••••••••••••••••••	
7∕8	44	"	7 to	9	46	44	***************************************	Per lb., \$0 1.4
I	44	**	8 to	12	46	"		.

PHILADELPHIA CARRIAGE BOLTS.

Warranted made from Norway Iron. With Forged Nuts, Turned Heads, and Finished Points.



PHILADELPHIA PATTERN . CARRIAGE BOLTS.

Extra Quality Refined Iron. With Forged Nuts, Turned Heads, and Finished Points. Please state if bevel or oval heads are wanted.

Diam. in.	1/8, 1/6, & 1/4	18	3∕8	76	1/2				ER 100.	_	- 4
Length, in.	70, 10, 74	1.0	/•	10		Diam., in.	*	1 g	₹8	18	1/2
I	\$ 2 50	3 20	4 55	5 60	7 64	Length, in.	A a				
11/4	2 65	3 20	4 55	5 60	7 64	1 %	\$2 40	2 70	3 60	5 40	7 20
1 1/2	2 8o	3 20	4 55	5 60	7 64	11/2	2 40	2 70	3 60	5 40	7 20
1 ¾	2 95	3 35	4 55	5 60	7 64	134	2 45	2 80	3 70	5 40	7 20
2	3 10	3 50	4 55	5 60	7 64	2	2 50	2 90	3 70	5 40	7.20
2 ¼ 2 ½	3 24	3 64	4 74	5 77	7 85	2 1/4	2 55	3 00	3 8 2	5 55	7 40
21/2	3 36	3 78	4 90	5 95	8 o6	2 1/2	2 60	3 10	3 95	5 70	7 60
2 3/4	3 50	3 92	5 ó8	6 12 .	8 27	2¾	2 65	3 20	4 08	5 85	7 8o
3 ~	3 65	4 06	5 25	6 30	8 4 8	3_,	2 70	3 30	4 20	6 00	8 00
314	3 78	4 20	5 43	6 48	8 69	31/4	2 75	3 40	4 32	6 15	8 20
3 ¼ 3 ½	3 92	4 34	5 60	6 65	8 90	31/2	2 80	3 50	4 45	6 30	8 40
314	4 06	4 48	5 78	6 83	9 11	3¾	2 85	3 60	4 58	6 45	8 6o
4	4 20	4 62	5 98	7 00	9 34	4	2 90	3 70	4 70	6 60	8 8o
44	4 34	4 76	6 14	7 18	9 55	4 1/4 4 1/2	2 95	3 80	4 83	6 75	9 00
4 ¼ 4 ½	4 48	4 90	6 30	7 35	9 76	4 1/2	3 00	3 90	4 95	6 90	9 20
5	4 75	5 20	6 68	7 70	10 18	434	3 05 .	4 00	5 07	7 05	9 40
51/2	5 02	5 48	7 00	8 05	10 60	5	3 10	4 10	5 20	7 20	9 6o
6	5 30	5 75	7 35	8 40	11 02	51/2	3 20	4 30	5 45	7 50	10 00
61/2	5 30	5 /5 6 02	7 33 7 70	8 75	11 44	. 6	3 30	4 50	5 70	7 80	IO 40
7		6 30	8 os	Q 12	11 44	61/2	3 40	4 70	5 95	8 10	10 8o
71/2		6 58		•	12 30	7 -	3 50	4 90	6 20	8 40	II 20 ´
8		6 86	- - -	9 45 9 80	12 72	7 1/2	• •	5 10	6 45	8 70	11 60
8 1/2		0 80	- /3	•		8′*		5 30	6 70	9 00	12 00
			9 10	10 15	13 14	81/2		5 50	6 95	ý 30	12 40
9			9 45	10 50 10 85	13 65	9		5 70	7 20	á 60	12 Šo
91/2				•	14 00	91/2		3 /-	7 45	ý 90	13 20
10				11 20	14 42	10			7 70	10 20	13 60
101/2				11 55	14 84	101/2			7 95	10 50	14 00
11				11 90 .	15 26	11			8 20	10 80	14 40
111/2					15 68	111/2			.	11 10	14 80
12					16 12	12				11 40	15 20
Bevel a	and countersur	ik heads fur	nished only v	vhen ordered.		121/2				40	15 60
						13					16 00
				4	•	14					16 80
•	•			A company		-4	00151501			201.00	10 00
		774	1.500				COMMON	CA.	RRIAGE	BOLTS.	

COMMON TIRE BOLTS. Fig. 1500. "UNIC

With Forged Nuts.

"UNION" AND PHILADEL-PHIA TIRE AND SLEIGH SHOE BOLTS.

	PER	100.		With Forged Nuts-Warranted.					
D., ir	1. å&%	16	3/8	D., in		PER 100.	5 16	3/8	
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$1 90 1 95 2 00 2 05 2 10 2 15 2 20 2 25 2 30 2 40 2 50 2 60	2 70 2 70 2 85 2 90 3 10 3 20 3 30 3 40 3 50 3 70 3 90 4 10	3 60 3 70 3 70 3 82 3 95 4 08 4 20 4 32 4 45 4 70 4 95 5 20	Lgth., 11/4 2 /4 2 /4 3 /4 3 /4 3 /4 4	in. \$1 50 1 50 1 50 1 50 1 50 1 50 1 50	1 68 1 68 1 68 1 68 1 68 1 68 1 75 1 82	2 24 2 24 2 32 2 41 2 50 2 58 2 66 2 74 2 82 2 90 2 98 3 06	3 20 3 30 3 40 3 50 3 60 3 70 3 80 3 90 4 00	
•		•	•	4 1/2			3 22		

STOVE AND SINK BOLTS.



With Forged Nuts.



•	•	PER 100.					· 		
D., in). 🖧	X	16	3∕8			PER 100.	Sink R	olts with
Lgth.,	in.	• •		•					uts.
3/8	\$ o 60				D., in	1. 16 & 23	×	• •	1/
1/2	0 60	65			Lgth.,	in.	~	Lgth.	~
₹	o 60	65			1/2	\$ 0 85	95	I	\$ 1 30
*********	o 60	65	I 05	2 20	5/8	0 85	95	τ ¼	I 35
%	o 65	70	1 05	2 20	*	0 85	95	11/2	I 40
I	o 65	70	I 10	2 20	7∕8	0 90	1 00	134	I 45
11/4	0 70	75	I 15	2 20	I	0 90	I 00	2	I 50
1 1/2	0 75	8o	I 20	2 20	1 1/8	0 95	I 00	21/4	I 55
134	o 80	85	I 25	2 20	11/4	0 95	1 05	21/2	1 60
2	o 85	90	I 30	2 20	13/8	1 00	1 05	2 34	1 65
21/4	0 90	95	I 35	2 30	1 1/2	1 00	I 10	3	1 70
21/2	0 95	1 00	1 40	2 40	134	1 05	I 15		
2¾	1 00	I 05	I 45	2 50	2	1 10	I 20		
3	1 05	I IO	I 50	2 60					

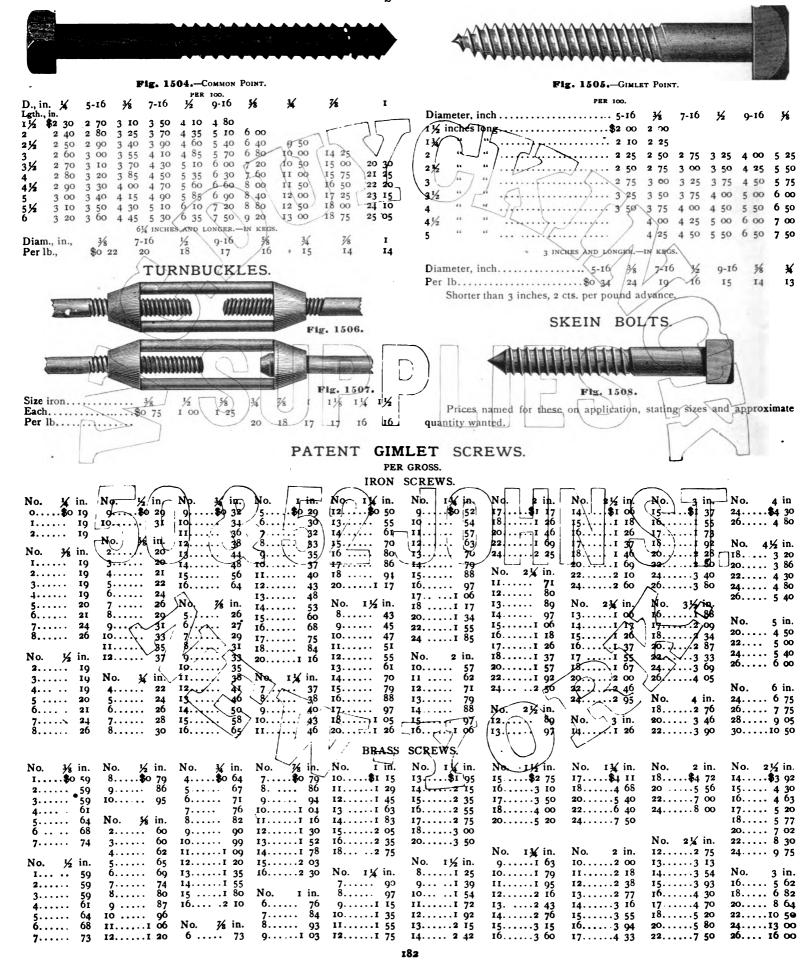
Fig. 1503.

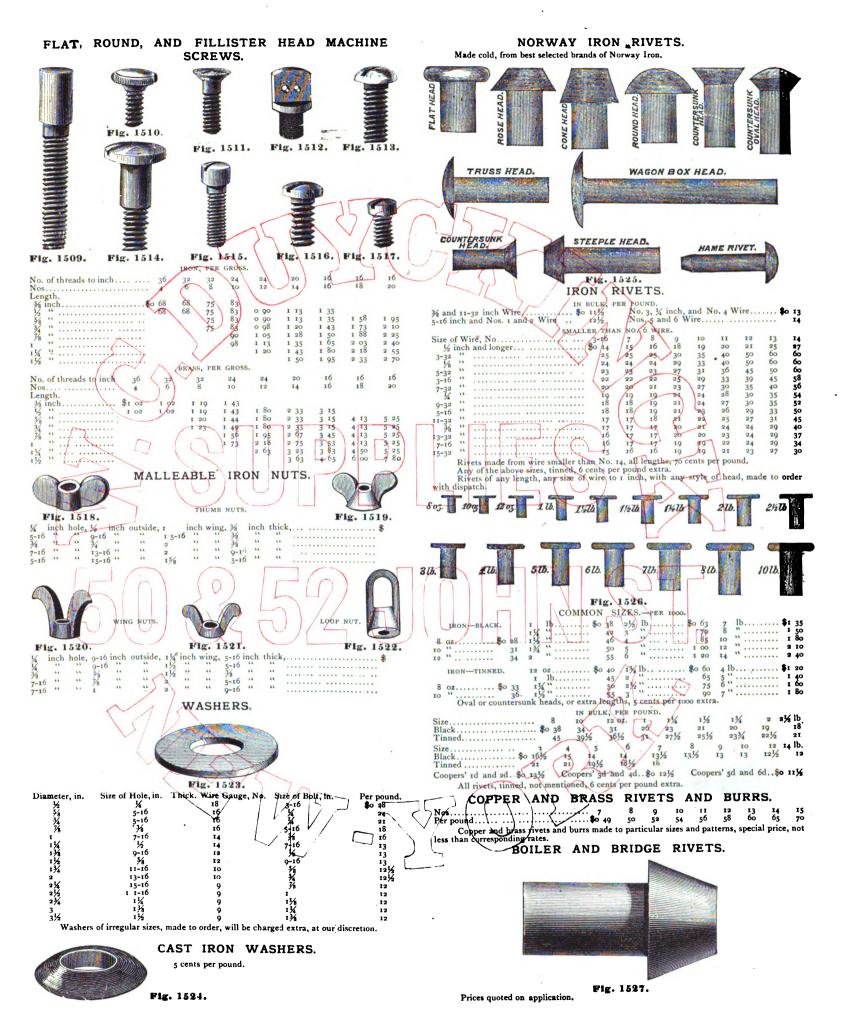
STANDARD LIST OF THE ASSOCIATION OF BOLT AND NUT MANUFACTURERS OF THE UNITED STATES.

			PER 100			
Diam., in	· ¾	1 6	3∕8	16	1/2	18 & 36
ength, in.	8 0 40					
I	\$ 2 40	`				
11/4	2 40					
1 1/2	2 40	3 00	,			
134	2 45	3 10				
2	2 50	3 20	4 00	6 00	7 25	
2 🔏	2 55	3 30	4 15	6 20	7 50	
21/2	2 60	3 40	4 30	6 40	7 75	
234	2 65	3 50	4 45	6 60	8 00	
3	2 70	3 60	4 60	6 8o	8 25	15 00
314	2 75	3 70	4 75	7 00	8 50	15 40
31/2	2 80	3 80	4 90	7 20	8 75	15 80
334	2 85	3 90	5 05	7 40	9 00	16 20
4	2 90	4 00	5 20	7 60	9 25	16 60
4 14	2 95	4 10	5 35	7 80	9 50	17 00
4 1/2	3 00	4 20	5 50	8 00	9 75	17 40
4¾	3 05	4 30	5 65	8 20 8 40	10 00	17 80
5	3 10	4 40	5 80 6 10		10 25	18 20
5 1/2	3 20	4 60			10 75	19 00
6	3 30	4 80	6 40	9 20	11 25	19 80
61/2	3 40	5 00	6 70	9 60	11 75	20 60
7	3 50	5 20,	7 00	10 00	12 25	21 40
71/2		5 40	7 30 7 60	10 40 10 80	12 75	22 20
8		5 60 5 80	•	II 20	13 25	23 00 23 80
8 1/2		5 80 6 00	7 90 8 2 0	11 60	13 75	23 80 24 60
9		6 20	8 50	12 00	14 25	
9½ 10		6 40	8 8 0	12 40	14 75 15 25	25 40 26 20
		0 40				
I I I 2			9 40 10 00	13 20 14 00	•	•
			10 00	14 80		29 40
13				15 60	•	31 00 32 60
14				15 00	19 25	_
15 16					20 25 21 25	34 20
10					41 25	35 8o

WOOD OR LAG SCREWS.

WITH SQUARE HEADS.





NUTS.

SQUARE NUTS.

COLD PUNCHED AND HOT PRESSED.

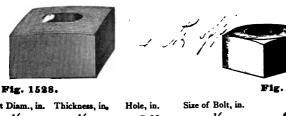


Fig. 152	8.	Fig. 1528.							
Short Diam., in.	Thickness, in.	Hole, in.	Size of Bolt, in.	Per lb.					
½	¥	7-32	×	\$ 0 2 0					
₩	5-16	9-32	5-16	17					
¥	3/8	11-32	3∕8	15					
₹	7-16	13-32	7-16	131/2					
7/8	% %	7-16	½ ½	131/2					
1	1/2	7-16	1/2	12					
11/8	% %	1/2	9-16	12					
11/2	⅓ 8	9-16	%	12					
1/4	5 %	9-16	₩,	111/2					
13/8	*	21-32	*	111/2					
1 1/2	*	21-32	** ** %	II					
15%	₹ ₹	25-32	₹ 8	11					
134	₹	25-32	₹8	11					
134	I	<i>7</i> 8	I	11					
2	I	%	I	11					
2	1 1/8	15-16	1 1/8	11					
21/4	1 1/8	15-16	1 1/8	II					
21/4	11/4	1 1-16	I 1/4	12					
21/2	11/4	1 1-16	1 %	12					
2¾	13/8	1 3-16	I 3/8	12					
3	1 1/2	1 5-16	1 1/2	13					
3 %	T 5/8	1 7-16	15/8	13					
31/2	" 1¾	1 9-16	134	14					
3¾	1 %	1 11-16	1 3/8	14					
4	2	1 13-16	2	14					

Sizes not enumerated on above list will be charged extra, at discretion of the manufacturer.

HOT PRESSED SQUARE and HEXAGON NUTS.

LIGHT OR "P" SIZES. 200 LB. BOXES.

Short Diam.,		Hole,	Size of Bolt,		r lb.
inch.	inch.	inch.	inch.	Square.	Hexagon.
⅓	3∕8	21-64	₹	\$ 0 17	\$ 0 25
*	7-16	3∕8	7-16	15	20
₹8	1/2	7-16	1/2	131/2	18
1	9-16	1/2	9-16	12	16
1 1/8	5∕8	9-16	5/8	12	16
11/4	¥	21-32	*	12	16
1 1/2	7/8	49-64	%	11	14
134	I	3/8	I	II	· 14
2	1 ½	1	1 1/8	II	14

FRANKLIN INSTITUTE SIZES (Adopted by the U. S. Government).

Short Diam., in.	Thickness,	Hole, inch.		Size of Bolt,	Per Square.	lb. Hexagon.
1/2	1/	.185= 👫 n	early.	-	\$ 0 20	
	74,	- 14		X .	•	\$ 0_30
19-32	5-16	.240= 1/4	**	5-16	18	25
11-16	3∕8	.294= 🛂	••	3∕8	18	25
25-32	7.16	·344= H	"	7-16	16	22
<i>7</i> /8	1/2	.400= 🚻	**	1/2	14	19
31-32	9-16	·454= 15	"	9-16	13	18
1 1-16	· 548	.507= #	**	· 5%	13	18
11/4	¥.	.620= 38	**	¥	12	16
1 7-16	3/8	.731= 11	**	3/8	12	16
15%	ľ	.837=	**	ı	111/2	15
1 13-16	1 ½	.940= 👯	"	1 1/8	111/2	15
2	11/4	$1.065 = 1 \frac{1}{10}$	• .	11/4	121/2	151/2
2 3-16	13/8	1.160=14	46	13%	121/2	153/2
23/8	11/2	1.284=1	"	11/2	131/2	161/2
2 9-16	1 3/8	1.389=14	44	1 3/8	131/2	161/2
214	134	1.491=114	44	134	15	18
2 15-16	1 7/8	1.616=156	"	178	15	18
31/8	2	1.712=1	••	2	15	18

HEXAGON NUTS.

COLD PUNCHED AND HOT PRESSED.



Fig. 1530.



Fig. 1531.

Short Diam., in.	Thickness, in.	Hole, in.	Size of Bolt, in.	Per lb.
½	×	7-32	*	\$ 0 30
₩	5-16	9-32	5-16	25
¥	3∕8	11-32	3∕8	20
7/8	7-16	13-32	7-16	18
₹ %	1/2	7-16		18
I	% % % % %	7-16	½ ½ %	16
1 1/2		9-16	} ⁄8	16
11/4	5∕ 8	9-16	⅓ 8	141/2
11/4	*	9-16	} ⁄8	141/2
13/8	*	21-32	*	141/2
1 1/2	7∕8	21-32	¾	14
15%	7/8	25-32	₹ 8	14
15%	I	25-32	7/8	14
134	I	7/8	I	14
134	1 1/8	7/8 7/8	I	14
2	11/4	15-16	1 1/8	14
21/4	13/8	1 1-16	1 1/4	15
2 1/2	1 1/2	1 3-16	1 3/8	15
21/	1 5⁄8	1 5-16	1 1/2	15
3	1¾ .	1 7·16	1 5/8	16
31/4	1 7/8	1 9-16	1 3/4	16
31/2	2	1 11-16	1 7/8	17
31/2	2	1 13-16	2	17

Sizes not enumerated on above list will be charged extra, at discretion of the manufacturer.

In ordering nuts, please say whether square or hexagon are wanted, and give the diameter, thickness, and size of hole required.

FINISHED NUTS.

COLD PUNCHED, CHAMFERED AND TRIMMED, U. S. GOVERNMENT STANDARD SIZES.



Wie. 1539



Fig. 1533.

Short Diam., inch.	Thickness, inch.	Hole, inch.	Size of Bolt, inch.	Pe Square.	er lb. Hexagon.
1/2	¥	$.185 = \frac{3}{16}$	1 ⁄	\$ 0 25	\$ 0 35
19-32	5-16	$.24 = \frac{1}{4}$	5-16	20	30
11-16	3/8	$.294 = \frac{9}{88}$	3/8	19	28
25-32	7-16	$.344 = \frac{11}{12}$	7-16	· 18	24
7/8	1/2	$4 = \frac{13}{13}$	1/2	15	19
31-32	9-16	·454= #1	9-16	13	18
1 1-16	5 ∕8	.507= 精	≸8	13	18
11/4	¥ <u>4</u>	$.62 = \frac{1}{8}$	*	121/2	16
1 7-16	7/8	$.731 = \frac{1}{41}$	7/s	121/2	16
1 5/8	ľ	.837= 17	1	12	15
1 13-16	1 1/8	$.94 = \frac{15}{4}$	1 1/8	12	15
2	I 1/4	$1.065 = 1_{10}^{11}$	11/4	121/2	151/2
2 3-16	1 3/g	1.16 = 1.5	13/8	131/2	151/2
23/8	11/2	$1.284 = 1\frac{9}{89}$	1 1/2	131/2	161/2
2 9-16	1 5/8	I.389=1 1 2	1 3/4 1	131/2	161/2
2 34	1 ¾	$1.491 = 1\frac{1}{2}$	1 ¾	15	18
2 15-16	1 7/8	1.616=15%	1 7/8	15	18

Sizes not enumerated on above list will be charged extra, at discretion of the manufacturer.

BELL CORD FITTINGS.





		•	
6			1.1
		(in a	
	1		

Fig. 1534.	PER D	OZEN.	Fig. 1535.	
Iron, japanned	\$0 65	Iron, japanned	· · • • • • • • · · · · • • • • • • • •	\$2 50
" bronzed	1 25	" bronzed		3 50
Brass, elegantly engraved	2 75	Brass		4 50
" plain, polished		Silver plated		5 50
" plated	3 50			

BELL CORD PULLEYS.









Fig. 1538. Fig. 1537.

			PER	DOZEN.				
Fig 1536 1536 1537 1537 1538 1539 15		Plain.		Plain.			S	crewed.
	Fig	1536	1536	1537	1537	1538	1539	1539
Iron, japanned	Iron, japanned	\$ 3 00	1 00	3 00	90	3 00	3 00	3 00
" bronzed 400 160 400 150 400 400 4	" bronzed	4 00	1 60	4 00	I 50	4 00	4 00	4 00
Brass 4 75 3 75 4 75 3 75 4 75 4 75	Brass	4 75	3 75	4 75	3 75	4 75	4 75	4 75
Plated 6 50 4 75 6 50 6 50 6 50	Plated	6 50	4 75	6 50	4 75	6 50	6 50	6 50

Fig. 1538 is same size as Fig. 1537, with the base lengthwise.

BELL CORD COUPLINGS.



Fig. 1540.



Fig. 1541.





Fig. 1543. PER GROSS.

	1540, iron, japanned		
	1541, " with rope knotted		
	1542, brass, with rope knotted		
**	2543, " the end to screw in	18	oc
*	1542, plated	24	. 00
	7742 11	24	~

BASKET RACKS.

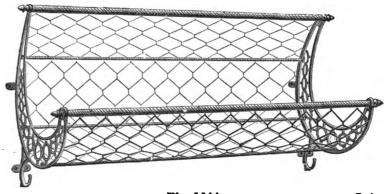


		Fig. 1544.	Each
Twenty-for	ır incl	hes long, brass brackets, plain rods	\$ 3 75
Longer, per	inch	extra	. 10
Shorter,	**	discount	. 05
Patent rack	, witl	h brass wire netting and tubular rods	6 50
Longer, per	rinch	extra	25
Shorter,	**	discount	. 10
Patent, silv	er pla	ated.,	9 50
Longer, per	r inch	extra	30
Shorter,	**	discount	12
With malle	able	iron brackets, no tubing	3 00
Longer, pe	r inch	n extra	. 10
Shorter,	"	discount	. 05
		racket, gold or copper bronzed, with tubing, and acorns on front rods	
Longer, per	r inch	extra	. 15
Shorter,	**	discount	. 08
Brass brack	cets, 1	with iron wire netting, tubing, and acorns, plated	. 5 50
Longer, per	r inch	ı extra	. 15
Shorter,	"	discount	. 08
Brass brack	cets, v	with iron wire netting, tubing, and acorns, plated	. 7 50
Longer, per	r inch	extra	20
Shorter,	**	discount	. 10

STRAP GUIDES.

Fig. 1546, brass trimmings, each......\$3 25 Fig. 1545, brass single strap guide, each, \$1 75 " 1546, plated " " " " 2 25 In ordering, give the length from the ceiling to the top of the roller.

DOUBLE.

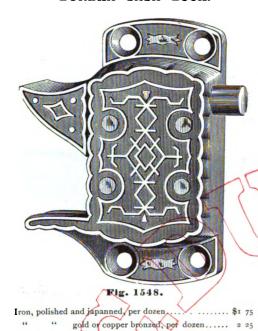


Fig. 1547, plated, each \$15 00



Fig. 1545.

Fig. 1547.



nickel plated, per dozen.... 3 25

SASH

DIFT.

and lacquered,

silver-plated,

EUREKA

Brass, L"

Brass

Bronze metal, polished

off. It is extra heavy.

Bronze metal, polished,

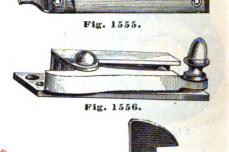
Brass angle stops, extra,

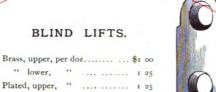


Brass, engraved, projecting from sash 11-16 in., per doz., \$1 00 Polished and lacquered, per doz..... 1 25 Silver plated and burnished, per doz. 2 00 Smaller size, engraved, projecting from sash 9-16 inch, per doz. Small size, plain, lacquered ...

plated....

" lower, " 1 50

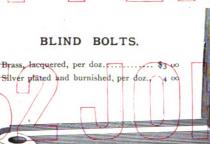




Locomotive cab fastenings, per doz \$12 00 gatches

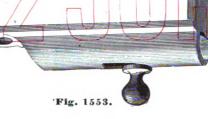


BLIND SPRINGS.

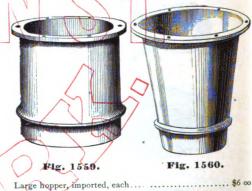


Brass, 41/2 inches long, 3/4 inch wide, per doz 41/2 :" 3/4 " Steel, 41/2 41/2

Fig. 1558.



HOPPERS.



Regular hopper, each 5 00 Extra high hopper, each..... 5 75

URINALS.

(NEW	PATTERN	SASH	LOCK.
NINDO	W LIET				

..... 2 50



Fig. 1549. Iron, electro-copper, to imitate bronze metal, per doz ... \$1 00 " polished, gold or copper bronzed, per doz...... 90 and nickel-plated per doz 1 25

The lip turns down so as to keep the finger from slipping

and lacquered

and silver plated

Fig. 1550.

50
75
25
60
25
75



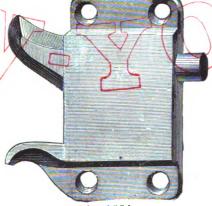


Fig.	1554	•

Brass, per doz	\$ 3	75
Silver or nickel plated, per doz	5	00

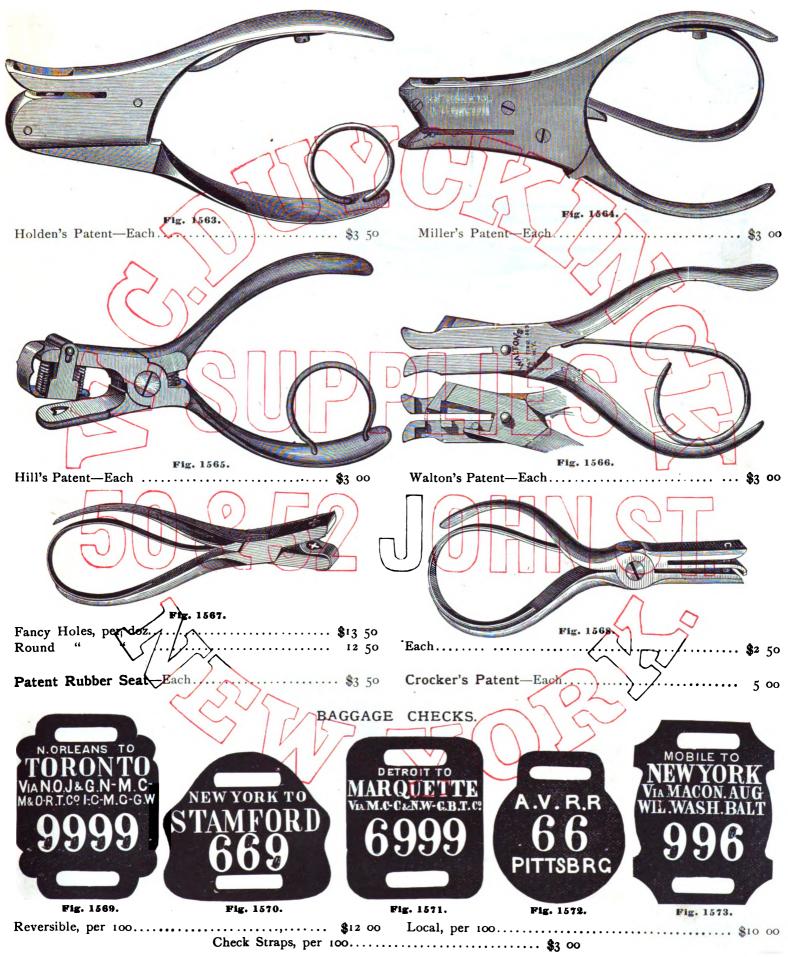




Fig. 1562.

Urinal, regular, each	₱3 75
Extra high back, imported, each	5 00

CONDUCTORS' CANCELING PUNCHES.



PATENT IMPROVED METALLIC SEALS, WIRES, AND PRESSES.

FOR SEALING EXPRESS AND FREIGHT CARS, ETC.

In Quantities of 5000. Per 1000.



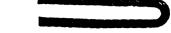


Fig. 1575.



Fig. 1576.

Leads and Wires, 7 inch			Twisted	Wires,	without	the Seal	s
" " io "	 10	50	· • •	**			
" " 12 "	 11	00			• •	**	
Large Leads and Wires	 15	လ					
						PHON ST	1
Fillian Committee					my UUU		W



Fig. 1578.

Large 1	Presse	s			\$15 co
Presses	with	Engraved	Dies,	to order, complete, each	:0 00
••	**	**	**	extra large, to order, complete, each	15 00

WATER COOLERS.

(Fig. 1579.)

Gallons	11/2	2	21/2	3	4	5	6	7	8	10	12	16
Each	\$2 00	2 40	2 70	ე თ	3 50	3 8o	4 50	5 50	7 25	10 00	12 00	16 00
All finished by mach	inery in	the ve	ry best	manner,	, and f	itted w	ith first	quality	Brass	Faucet		
Plated Telegraph Cocks,	each									. 	 .	\$2 50

ICE TONGS.

Per	Pair	***************************************	\$1 50 to 3 00

ICE AXES.

Fach			A
Each	 	 	



BRASS PATENT RACK TUMBLER SPRING PAD LOCKS.



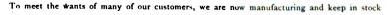
Fig. 1580.

For F	REIGHT CA	RS AND SWITCHES. Keys,
Without Keys, per doz.	Keys,	Without Keys, per doz. per doz.
21/2 inch, Tumbler, Loose Drop and Chain for Railroad Cars	per doz.	3 inch, Tumbler, Heavy, Spring Drop and Chain \$18 25 1 75
and Switches \$12 25	1 25	3 "3 " " " " 22 00 2 00
21/2 inch, Tumbler, Spring Drop and Chain for Railroad Cars		Also,
and Switches 12 75	1 25	An Improved Stationary Freight Car Lock, Iron 22 00 2 00
21/2 inch, Tumbler, Heavy, Spring Drop and Chain for Rail-		" " Brass 24 00 2 00
road Cars and Switches 13 75	1 25	·
21/2 inch, Waterproof, Tumbler, Heavy, Spring Drop and		Stationary Freight Car, Passenger Car, and Switch Locks made to
Chain for Railroad Cars and Switches	1 25	order, to suit any key furnished, and guaranteed to fit.
23/4 inch, Tumbler, Heavy, Spring Drop and Chain 16 50	I 50	Special Locks made for any Railroad Company, of any weight, size, or
23/ " 3 " " " " " 18 50	1 50	peculiarity, and kept for their exclusive use.

EUREKA COMBINATION WRENCH.







FUSIBLE PLUGS FOR BOILERS.

Our standard alloy melts at 392 degrees Fahrenheit, which is equal to about 200 lbs. pressure, but can furnish alloys to melt at any special number of degrees required.

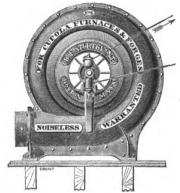
All are cut for 3/4 inch pipe thread.



Fig. 1583.



STURTEVANT BLOWERS.





For removing Dust Smale etc

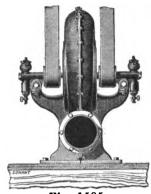


Fig. 1585.

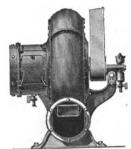


Fig. 1586.

STEEL PRESSURE BLOWER.

FOR CUPOLA FURNACES AND FORGES. (Fig. 1584.)

				(1.18. 1204)	• •							
No. of Blower	on 35∕4	41/4	1 4¾	2 51⁄4	3 61/a	734	78¾	6 101/2	7 11 ⁷ / ₂	8 1378	16	1878
Diameter of Pulley "Width of Face, Without Countershafts or Pulleys	1 1/2 1 1/2 \$20 00	21/4 13/4 25 00	25/8 2 35 00	3 23/8 50 00	358 234 65 00	4½ 3½ 90 00	4 % 3 % 130 00	5¾ 4½ 180 00	634 51/8 240 00	73/4 6 310 00	9 67% 390 00	10 3/8 8 480 00

PATENT FAN BLOWER.

To beam Doners, I addring and Irearing I arranged and		•	(Fig. 1585.)						
No. of Blower Diameter of Outlet of Blower, inch	1	2	3	4	5	6	7	8	9
	558	65%	7⅔	9	10∯	121/4	145%	16½	19
	\$25 00	35 00	45 oo	60 00	90 00	130 00	180 00	240 00	310 00

MONOGRAM EXHAUSTER.

Tot temoving Dust, on and one		(Fig. 1586.)					
No Each.	‡ ₃₅ ∞	2 50 00	65 ³ ∞	90 0 0	5 130 00	6 180 00	7 240 00	8 310 0 0

PATENT EXHAUSTER

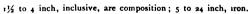
20	0	1	2	3	4	5	6	7
5.56	65/8	7 <i>3</i> %	9	10%	12 📈	145%	161/2	19
614	7 <u>%</u>	9	10 1	115%	13¾	15	181/2	21
3 1/2	4%	5	534	634	734	834	10 1	11
272	3%	4	4%	5%	61/2	6¾	81/2	834
4 25 00	35 ∞	45 00	05 00	90 00	130 00	180 00	240 00	310 00
•	70 5% 6% 3% 2% 25 00	20 0 554 654 634 734 334 434 234 334	5% 6% 7% 9 3% 4% 5 2% 3% 44 5	20 0 1 2 5% 6% 7% 9 6% 7% 9 10% 3% 4% 5 5% 2% 3% 4 4%	70 556 656 657 776 9 1056 1156 357 357 458 5 5 5 5 5 5 5 5 5 5 5 5 5	70 0 1 2 3 4 5% 6% 7% 9 10% 11% 12% 6% 7% 9 10% 11% 13% 3% 4% 5 5% 6% 7% 2% 3% 4 4% 5% 6%	700 0 1 2 3 4 5 556 656 776 9 1056 1256 1456 656 756 9 1056 1156 1356 15 357 456 556 656 756 856 224 356 4 4 4 5 5 656 656 656	0 1 2 3 4 5 6 5 6 5 6 7 7 8 9 10 1 1 2 13 14 14 16 16 16 16 16 17 18 18 18 18 18 18 18 18 18 18 18 18 18

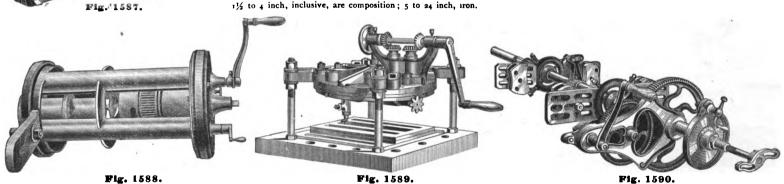
COUNTERSHAFT, HANGERS, AND PULLEYS.

BLAST GATE.

(Fig. 1587.)

For opening and closing Pipes which supply Blast to Furnaces, Forges, etc.





FLANDERS' PATENT CRANK PIN MACHINE.

		(Fig. 1588.)			
For turning off Crank Pins ia position, and while the wheels are un	nder the engine. Each				\$250 oo
FLANDERS' PATENT	IMPROVED LO		CYLINDER	BORING	MACHINE.
		(Fig. 1589.)			

and Screw	of Cast Steel, with	1 2 5Xt1	a Cutter Heads, eac	n		•• ••••••	• • • • • • • • • • • •	· · · · · · · · · · · · · · · · · · ·	••••••	••••••••	•••••
	KIEHNER	&	ODENATT'S	PATENT	PORTABLE	VALVE	SEAT	ROTARY	PLANING	MACHINE.	

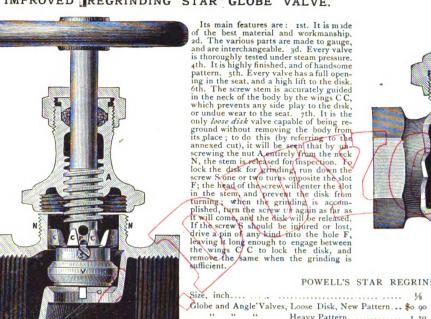
	(Fig. 1590.)		
18 inch Valve Seat, each \$250 00	22 inch Valve Seat, each \$275 00	26_inch Valve Seat, each	\$300 co

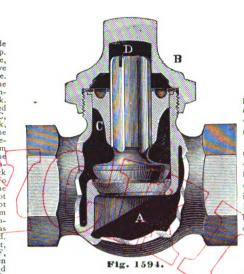
LONG'S PATENT IMPROVED PORTABLE SLIDE VALVE AND SIX INCH HAND OR POWER SHAPER. STEAM CHEST SEAT PLANING MACHINE. Fig. 1591. Fig. 1592, The above cut represents our Hand or Power Shaper (or Planer); it has Planes 24 × 20 inches, each. \$350 00 six inch stroke, and eight inch traverse; the chuck is made to raise or lower to suit different kinds of work; the head is indexed for planing bevels; also, the chuck is indexed for planing angles, making it one of the most complete tools for small work that has yet been made. It weighs about 200 PIG IRON, SCOTCH OR AMERICAN. At best market rates. Each BOILER PLATE IRON SHEATHING, BRAZIERS COPPER, BOLTS, Etc. Extra Flange... C. H., No. I, or Charcoal Hammered C., No. 1.... Fire Box IRON. At market rates. Sheathing Copper, over 12 oz., per square foot..... Common, ordinary sizes Refined, Flat, Round, and Square Rods, Round and Square Ovals, Half Ovals, and Half Rounds Band Noop

Horseshoe Scroll Ulster, Burdons, etc. Bolt Copper is Sheathing except 14 48 inches, and not to exceed 34 ounces to the square foot. Wrought Iron Beams ... Deck Beams
Channel Bars TINNING. Star Iron... 14 × 48 inches, by the case per sheet..... Angle Iron, all kinds..... less than case, " 14 × 48 Ordinary sized sheets, per square foot.

For Tinning Sheets both sides, double the above amount. T Iron, Equal and Unequal...... Octagonal Post Iron...... "Upset" Chord Bars..... Straits, per lb..... STEEL. Banca, per lb.... English, per lb. PREED AND DOMESTIC. Best English Cast Steel. Sheet, per 1b..... .. Block, per 18 Tire .. SRELTER. Machinery Bessemer Wire Rods. PIGS, BARS, AND PLATES. Tire Steel, 3-10 inch up .. American American, per lb.....\$ Silesjan, pet lb. .. 3-32 MISCELLANEOUS. Spring Steel Tool Special rates given on application. Railroad Iron—Railroad Chairs—Railroad Spikes—Fish Joints, Bolts— Street Rails—Screw Rods—Wire Rods—Plow Iron—Chain—Fire Box Iron—Smoke Stack Iron—Soft Patch Iron—Bead Iron—Car Axles— Car Wheels—Patent Cold Rolled Shafting—Forgings, Shapes, etc. Toe Calk Plow Sleigh Shoe Bessemer Perforated Sheets of various Metals to Order. Steel Forgings to Order. **GALVANIZED** SHEET IRON. 16 17 18 20 21 22 28 Nos..... 12 19 26 29 46 42 36 30 27 22 20 18 16 15 12 II Oz. per square foot..... 70 53 35 14 \$0 12 12 12 12 12 I 2 16 Per Pound..... 24, 26, 28, and 30 inches wide by 7 feet long kept in stock.

IMPROVED [REGRINDING STAR GLOBE VALVE.





PATENT CHECK VALVE.

The valve stem being guided at its upper end, there is no obstruction of the opening in the valve seat, as with check valves, which are constructed with guides BELOW the seat.

To regrind the Check Valve: Remove the cap B, and insert a screw driver in the slot on the end of the valve stem D, turn backward and forward until a bearing is obtained. The plate C preserves the stem in an axial position in the act of grinding. It is the only check valve made that can be reground without guide on the lower end of the valve.

21/2

POWELL'S	STAR	REGRINDING	GLOBE	VALVES.—BEST	STEAM METAL
		1/8 1/2	3/8	1/2 3/4	11/4

PLUGS. WITH RUBBER STOPPERS.

	Globe and Angle Valves, Le	ose Disk, New	w Pattern \$0	90 90	1 00	1 35 1 8	5 2 50 3 5	0 4 75 -	7-35 12 50	20 00
	" " н	eavy Pattern.	1		1 20	1 60 2 1		5 75	9 00 15 00	24 00
44444	wi wi	th Flanges							26-0 0 \27 50	40 00
	Diameter of Flanges, inch.		•••••					1	6) [8	9
			CHECK	VALVES	Prem C	TEAM META		(/ \	
				TALVES.	THEO!	TEAM MELA			\	
/	Size, inch			3/8	1/2	3/4	1/4	1 1/2	21/2	3
1	Globe, Angle, and Vertical	Check Valves.	90 9	00 1	1 20	1 50 2	00 3 25	400 67	5 12 00	20 00
							1			
	STAR REGRIND	ING IRON	GLOBE VALV	ES.—BRAS	s Mount	ED.		\		
		11/4	11/2	2	21/2	2	31/2	F4		6
	\$3/25	4 00		8 00	14 00	18 00	24 00	32 00	>46 m	56 ∞
		5 00	6 00	9 00	15 00	20 00	26-00	-	/ •	
		-		,				35 00	59⁄90	64 00
		4 00	5 00	7 15	12 00	15 00	20 00	28 00	/	1

8 15

STAR RADIATOR VALVES, GLOBE OR ANGLE.—BEST STEAM METAL.

6 00

5 00

8 50 13 50

Size, inch Wooden Handles Plated Tops, with Wooden or T Handles Radiator Nipples St 50 20 2 40 15	2 00 2 70 3 45 25 10 66 15 8 20 11 90 60
PATENT "STAR" BASIN PLUGS.	PATENT "STAR" WASH TRAY PLUGS.
WITH RUBBER STOPPERS	WITH RUBBED STOPPERS.
Size, inch 1 11/4	Size, inch
Common Overflow, Brass, per doz \$5 50 9 50	Brass, per doz \$4 20 5 00 7 00 12 00
" Plated, "	Plated " 5 50 6 50 8 75 15 00
Patent " Brass, " 700 11 00	
" Plated, "	PATENT "STAR" SOAPSTONE TRAY

PATENT "STAR" SINK OR BATH PLUGS.

Fig. 1593.

Size, inch..... Globe and Angle Valves, Screwed Ends.... Check Valves, Screwed Ends.... Flanged " ...

WITH RUBBER STOPPERS.	10	> 1	Size, inch 1½ Not \$0.00	
Size, inch	11/4 1	2 2		12 00
Brass, per doz \$3 50	4 25 5	50 7 00	Rubber Plugs, for Wash Basins.	
Plated, " 4 50	5 50 7	00 9 00	Per doz	\$1 8o



Fig. 1595 .- WASH TRAY PLUG.



Fig. 1596.—BASIN PLUG. Fig. 1597 .- RUBBER PLUG.



Fig. 1598 .- SINK PLUG.

GODDARD'S SOLID (RELIEF) REAMERS.



Fig. 1599.

This Reamer is intended to meet all the objections heretofore made by machinists against this tool.

1st. It will not draw itself into the work, and will not chatter.

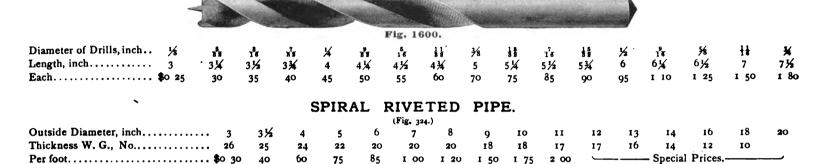
- 2d. Can not cut under the true surface.

- 3d. Can not be forced.
 4th. Will always produce a perfect hole.
 5th. It is substantially the reverse of the old tools.

Diam. of Reamer, in.	×	16	3/8	7 6	1/2	18	5∕8	116	34	18	7/8	15	1	118	. 1 1/8	1,8	1 🏋	1 18	13/8	I T	1 1/2
Full Length, inch	3 1/2	4	4 1/2	5	5 1/2	6	61/2	7	71/2	8	8 1/2	9	912	10	101/2	11	111/2	12	121/2	13	13
Length of Flute, in.	1 34	2	21/4	21/2	2 3/4	3	31/4	31/2	33/4	4	41/4	4 1/2	434	5	5,14	51/2	5 34	6	614	61/2	61/2
Each	\$ 1 40	I 55	1 70	1 85	2 00	2 20	2 40	2 60	2 90	3 20	3 50	3 80	4 10	4 50	4 90	5 30	5 70	6 10	6 50	7 00	7 50

STRAIGHT SHANK MACHINE BITS.

FOR WOOD.



SPIRAL LOCKED PIPE	

	(,	fig. 325.)						
Outside Diameter, inch *	I	2	21/2	3	31/2	4	5	6
House Leader, Galvanized Iron, per lineal foot		\$ o o8	12	15	17	20	25	30
Tin Speaking and Bell Tubes, " " \$0 03	04	o 6	10	13				
Thickness W. G., No	30	30	28	27	26	25	24	24

KNOWLES' AND BLAKE'S STEAM PUMPS.

(Figs. 106 and 108.)

41/2 5 6 61/2 Size of Pump, No..... o T 7 10 ΙI 12 Complete.......\$85 00 125 00 150 00 200 00 225 00 275 00 350 00 375 00 400 00 450 00 525 00 600 00 Prices according to work required.

REDUCED LISTS, FEBRUARY 1st.

	JUDSON	1 GOV	ERNOR	
Capacity of Governor, or Diameter of Steam Pipe, inch.	Plain.	Bright Finish. Big.	Spring Speeder or Lever er Attachment, for altering Speed.	Improved Stop Valve.
೮ ಕ್ಷ		\$18 oo	\$1.90	- !
1/4 1/4	\$16 00 18 00	20 00	1 90	İ
I	20 00	22 00	2 00	\$5 00
11/4	23 00	26 oo	2 25	6 00
1 ½ 1 ½	26 00	30 OO	2 50	8 00
2	31 00	35 00	2 75	10 00
2 ½ 2 ½ 3 ½ 4 ½ 5 ½ 6	36 vo	41 00	3 25 3 50 3 75 4 25 4 50 5 00 5 50 6 00	12 00
2 1/2	40 00	45 00	3 50	14 00
2 🔏	45 00	51 00	3 75	16 00
3.,	50 0 0	57 00	4 25	19 00
31/2	59 00 69 00 80 00	67 00 78 00	4 50	23 00 28 00
4,,	09 00	78 00	5 00	28 00
4/2	80 00	90 00	5 50 6 00	34 00
5	90 00	101 00	6 50	40 00
572	105 00	117 00		46 00
	120 00	133 00 156 00	7 00 8 00	54 00 65 00
7 8	142 00	192 00		79 00
	175 00 198 00	218 00	9 00 10 00	/9 ∞
9 10	218 00	240 00	12 00	i
10	210 00	A40 00	12 00	

PICKERING GOVERNOR.

(Fig. 95.)										
Size, inch.	Finished.	Plain.	Portable.	Speed Ad- juster.	Speed Adjuster and Stop Mouon					
1/2	\$18 00	\$ 16 00	\$ 16 00							
*	19 00	18 00	17 00							
I	22 00	20 00	19 00	\$2 00	\$ 6 50					
1 1/4	25 00	22 00	21 00	2 50	7 00					
1 1/2	29 00	26 oo	25 00	2 50	8 00					
2	33 00	30 OO	29 00	3 00	9 00					
2 1/2	45 00	11 00		3 50	to 00					
3	57 00	50 00		4 25	12 00					
31/2	66 oo	58 oo		4 50	13 00					
4	78 oo	69 00		5 00	15 00					
5	100 00	88 oo		6 00	16 00					
6	130 00	118 00		7 00	17 00					
7	155 00	140 00		8 00	19 00					
8	188 00	170 00		9 00	21 00					
-			GS.							
		(Fig	. 867.)							
Size	, inch	. r¼	1 ½	13∡	2					

Each..... \$0 95 I IO

DONOHUE'S PATENT GAS BURNER.



Plain, per gross......\$10 00 Plated, " 12 00



